PROJECT MANUAL SPECIFICATION

BID DOCUMENTS (DIVISION 00 - 33)

Rogers Free Library Interior Modification Project

525 Hope Street Bristol, R.I. 02809 Bid #1065



Town of Bristol, Rhode Island 10 Court Street Bristol, R.I. 02809

> April 2025 RGB #6846

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Rogers Free Library Interior Modification Project

TOWN OF BRISTOL, RHODE ISLAND 10 COURT STREET BRISTOL, RI 02809

INVITATION FOR BID

Rogers Free Library Interior Modification Project BID #1065

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NOTICE TO BIDDERS

Rogers Free Library Interior Modification Project BID # 1065

The Town of Bristol is requesting sealed bids for **Rogers Free Library Interior Modification Project**, in accordance with all terms and specifications contained herein. Sealed proposals will be received at the Town Clerk's Office, Town Hall, 10 Court Street, Bristol, RI, until:

Twelve (12) o'clock P.M., Local Time
May 28, 2025
All Bids received will be publicly opened at this time at Town Hall.

A mandatory pre-bid conference will be held at the Rogers Free Library, 525 Hope Street, Bristol, RI, at 10:00 AM EST on Monday, May 12, 2025.

Instructions, specifications and evaluation criteria may be obtained and responses MUST be filed at the Office of the Town Clerk, 10 Court Street, Bristol, RI 02809. Instructions, specifications and evaluation criteria may also be obtained through the Town's online bidding system at https://www.bidnetdirect.com/rhode-island/bristolri upon registering and/or logging in as a vendor.

Proposals/Bids (one original marked "MASTER" and one copy) must be submitted in sealed envelopes addressed to the Town Clerk's Office, Town Hall, 10 Court Street, Bristol, RI 02809, and must be plainly marked in the upper left-hand corner, **Rogers Free Library Interior Modification Project**, - Bid #1065".

Individuals requesting interpreter services for the hearing impaired must notify the Town Clerk's Office (401) 253-7000 three business days prior to the bid opening.

It is the bidder's responsibility to see that the bid is delivered within the time and at the place prescribed. Bids received prior to the time of opening will be securely kept, unopened. Bids may be withdrawn upon written request (on the letterhead of the bidder and signed by the person signing the bid) if such request is received prior to the time fixed for opening. Bids may be modified in the same manner. No bid or modification thereof received after the time set for opening will be considered, even if it is determined by the Town that such non-arrival before the time set for the opening was due solely to the delay in the mail for which the bidder is not responsible.

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Any bidder taking exception to, or questioning any of the provisions, procedures, conditions or specifications herein stated should make such exceptions known to the undersigned, in writing, not less than five (5) days before the bid opening.

Any change or interpretation made as a result thereof will be published in an addendum and sent to all prospective bidders. Should a bidder still not be satisfied, he may, in the bid, set out and stipulate the exception, with enough explanation to be understood by the Town and, within the stipulation, the INCREASE or DECREASE in the bid price because of the exception shall be stated. The Town may, at its discretion, accept or reject any or all exceptions.

It is required that all supplies and services provided to the Town comply with applicable governmental laws and regulations.

Any payment discount offered shall be for payment within a period of not less than fifteen (15) days.

The work shall meet the requirements and satisfaction of the Town of Bristol, Rhode Island.

The right is reserved, as the interest of the Town may require, to reject any or all bid proposals, to waive any technical defect or informality in bids received, and to accept or reject any bid or portion thereof.

One copy of these papers is furnished to bidders. One complete copy must be attached to the bid if a bid is tendered.

Prevailing Wages:

The successful contractor and sub-contractor(s) shall comply with the provisions of Rhode Island General Laws, (RIGL) Chapter 37 pertaining to the "Prevailing Wage Laws" for all municipal funded projects in excess of one thousand (\$1,000) dollars. The RI Department of Labor has accepted the prevailing wage rates as determined by the Federal Wage and Hour Division under the Davis-Bacon Act. A copy of the most current wage decision pertaining to this bid is available from the Director of Labor at 457-1860 or on the website: www.dlt.ri.gov/pw.

As required under RIGL 37-13-13, the successful contractor and/or sub-contractor(s) must certify and submit weekly payroll forms to the Treasurer's Office. Rules and requirements for prevailing wages and the associated required payroll forms are located at http://www.dlt.ri.gov/pw/pwFormsPubs.htm.

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Note: All bidders are responsible for insuring that no alterations have been made to the original bid package. All bid packages and addenda (if any) are located at www.bristolri.gov under "Bid & RFP Opportunities" - or you can contact the Clerk's Office.

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INSTRUCTIONS TO BIDDER

<u>ACCEPTANCE PERIOD</u>. Unless otherwise specified herein, bids are firm for a period of 1 year. If the successful bidder and the Town of Bristol mutually agree, the period of service may be extended for an additional 1 year.

<u>ADDENDA ACKNOWLEDGMENT</u>. Each bid shall include specific acknowledgment in the space provided of receipt of all addenda issued during the solicitation period. Failure to so acknowledge may result in the bid being rejected as not responsive.

AUTHORIZED SIGNATURES. Every bid must be signed by the person or persons legally authorized to bind the Bidder to a contract for the execution of the work. Upon request of the Town of Bristol, any agent submitting a bid on behalf of a Bidder shall provide a current power of attorney certifying the agent's authority to bind the Bidder. If an individual makes the bid, his or her name, signature, and post office address must be shown. If a firm or partnership makes the bid, the name and post office address of the firm or partnership and the signature of at least one of the general partners must be shown. If a corporation makes the bid, the bid shall show the name of the state under the laws of which the corporation is chartered, the name and post office address of the corporation and the title of the person signing on behalf of the corporation. Upon request of the Town of Bristol, the corporation shall provide a certified copy of the bylaws or resolution of the board of directors showing the authority of the officer signing the bid to execute contracts on behalf of the corporation.

<u>AWARD OF BID</u>. Award will be made to the Bidder offering the lowest qualified, evaluated bid.

<u>CANCELLATION OF SOLICITATION</u>. The Town of Bristol may cancel this solicitation at any time.

<u>COMPLIANCE WITH LAWS.</u> All bids shall comply with current federal, state, and other laws relative thereto.

<u>DEFINITION OF TERMS</u>. For the purposes of this Invitation for Bid, the following definitions will be used:

- a. Contractor. Same as Successful Bidder.
- b. May. Indicates something that is not mandatory but permissible.
- c. **Must/Shall**. Indicates a mandatory requirement. A bid that fails to meet a mandatory requirement will be deemed non-responsive and not be considered for award.

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- d. **Bidder.** The person or firm making the offer.
- e. **Bid.** The offer presented by the Bidder.
- f. **Should**. Indicates something that is recommended but not mandatory. Failure to do what "should" be done will not result in rejection of your bid.
- g. Submittal Deadline. The date and time on or before all bids must be submitted.
- h. Successful Bidder. The person, contractor, or firm to whom the award is made.

<u>DOCUMENTS TO BE RETURNED WITH BID</u>. Failure to completely execute and submit the required documents before the Submittal Deadline shall render a bid non-responsive. The documents that must be returned by the Submittal Deadline are listed on the form entitled "Bid Documents To Be Returned" and attached hereto.

<u>INK OR TYPEWRITTEN</u>. All information, prices, notations, signatures, and corrections must be in ink or typewritten. Mistakes may be crossed out and corrections typed or printed adjacent to the mistake and initialed in ink by the person signing the bid.

<u>NOMENCLATURES</u>. The terms Successful Bidder, Successful Contractor, and Contractor may be used interchangeably in these specifications and shall refer exclusively to the firm with whom the Town of Bristol enters into a contract because of this solicitation.

<u>NON-COLLUSION AFFIDAVIT</u>. Bidders are required to submit a Non-Collusion Affidavit with their Bids. See Attachment B. If there is reason to believe that collusion exists among the Bidders, the Town of Bristol may refuse to consider bids from participants in such collusion.

<u>OPENING OF BIDS</u>. All bids, irrespective of irregularities or informalities, will be opened and the names of the Bidders and proposed prices will be publicly read aloud at the Submittal Deadline. All interested persons are invited to be present at the opening and reading of bids.

a. <u>Postponement of Opening.</u> The Town of Bristol reserves the right to postpone the Submittal Deadline and opening of bids any time before the date and time announced in the Invitation for Bids or subsequent addenda.

<u>PRICE DISCREPANCIES</u>. In the event that there are unit price items in a bid schedule and the "amount" indicated for a unit price of an item does not equal the product of the unit price and quantity listed, the unit price shall govern and the amount will be corrected accordingly. If there is more than one item in a bid schedule, and the total indicated for the schedule does not agree with the sum of prices of the individual items, the prices given for the individual items shall govern and the total for the schedule will be corrected accordingly. The Bidder will be bound by said corrections.

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<u>PRICES</u>. All Bids shall give the prices proposed, both in writing and in figures, shall give all other information requested herein, and shall be signed by the Bidder's authorized representative. Bid prices shall include everything necessary for the completion and fulfillment of the contract.

<u>BID FORMS/SUBMITTAL.</u> Bids should be clearly labeled and submitted in a sealed envelope or box bearing the name of the Bidder and Bid number. Bidder's authorized representative must properly initial any erasures or alterations of any kind. Bids that contain omissions or improper erasures or irregularities may be rejected. No oral, electronic, telegraphic, or telephonic bids or modifications will be considered.

- a. Forms. Bids must be submitted on the form in Attachment A.
- b. Copies. One (1) original bid marked "MASTER "and one (1) identical copy must be submitted on or before the Submittal Deadline.
- c. Discrepancies. If discrepancies are found between the original and copy, the original "MASTER" will provide the basis for resolving such discrepancies. If one document is not clearly marked "MASTER", the Town of Bristol reserves the right to use the original as the Master.

<u>BID CONTENT</u>. Bidder must describe in detail how they will meet the requirements of this Bid, and may provide additional related information with his bid. Bids should be straightforward and concise. Emphasis should be concentrated on conforming to the Bid instructions, responding to the Bid requirements, and on providing a complete and clear description of the offer. If a complete response cannot be provided without referencing supporting documentation, the bidder must provide such documentation with the bid indicating where the supplemental information can be found.

The Town of Bristol is not liable for any costs incurred by Bidders before entering into a formal contract. Costs of developing the bids or any other such expenses incurred by the Bidder in responding to the Bid, are entirely the responsibility of the Bidder, and shall not be reimbursed in any manner by the Town of Bristol.

BID MODIFICATIONS. Any Bidder who wishes to make modifications to a bid already received by the Town of Bristol must withdraw his bid in order to make the modifications. Withdrawals must be made in accordance with the terms and conditions of this solicitation (see Bid Withdrawal). All modifications must be made in ink, properly initialed by Bidder's authorized representative, executed, and submitted in accordance with the terms and conditions of this solicitation. It is the responsibility of the Bidder to ensure that modified or withdrawn bids are resubmitted before the Submittal Deadline.

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<u>BID WITHDRAWAL</u>. Bidders' authorized representative may withdraw bids only by written request received before the Submittal Deadline.

<u>BIDDER'S BACKGROUND</u>. Bidder must provide a company profile. Information shall include:

- a. Company ownership. If incorporated, the state in which the company is incorporated and the date of incorporation.
- b. Location of the company offices.
- c. Number of employees both locally and nationally.
- d. Location(s) from which employees will be assigned.
- e. Name, address, and telephone number of the Bidder's point of contact for a contract resulting from this Bid.
- f. Company background/history and why Bidder is qualified to provide the services described in this Bid.
- g. Length of time Bidder has been providing services described in this BID. Please provide a brief description.

Bidder must include in his bid a complete disclosure of any alleged significant prior or ongoing contract failures, any civil or criminal litigation or investigation pending which involves the Bidder or in which the Bidder has been judged guilty or liable. Failure to comply with the terms of this provision will disqualify any bid. The Town of Bristol reserves the right to reject any bid based upon the Bidder's prior history with the Town of Bristol or with any other party, which documents, without limitation, unsatisfactory performance, adversarial or contentious demeanor, significant failure(s) to meet contract milestones or other contractual failures.

<u>BIDDER'S REFERENCES</u>. Bidders should provide a minimum of three (3) references from similar projects performed within the last five years. Information provided shall include:

- a. Client/Business name;
- b. Project description;
- c. Project dates (starting and ending);
- d. Client/Business project manager name and telephone number.

<u>PUBLIC RECORDS</u>. Rhode Island law provides that municipal records shall at all times be open for personal inspection by any person. Information and materials received by the Town of Bristol in connection with a Bid response shall be deemed to be public records subject to public inspection upon award, recommendation for award, or 10 days after bid opening, whichever occurs first. However, certain exemptions to the public records law are statutorily provided. If the Bidder believes any of the information contained in his or her response is exempt from the Public Records Law, then the Bidder, must in his or her response, specifically identify the

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material which is deemed to be exempt and cite the legal authority for the exemption, otherwise, the Town of Bristol will treat all materials received as public records.

QUALIFICATION OF BIDDERS. Each Bidder shall be skilled and regularly engaged in the general class or type of work called for under the contract. The Bidders experience shall be set forth and submitted on the form provided herewith. It is the intention of the Town of Bristol to award a contract to a Bidder who furnishes satisfactory evidence that the Bidder has the requisite experience, ability, sufficient capital, and facilities to enable the Bidder to prosecute the work successfully and properly, and to complete it within the time specified in the contract. To determine the degree of responsibility to be credited to the Bidder, the Town of Bristol will weigh any evidence that the Bidder has performed satisfactorily other contracts of like nature, magnitude and comparable difficulty and comparable rates of progress. In selecting the lowest responsive and responsible Bidder, consideration will be given not only to the financial standing but also to the general competency of the Bidder for the performance of the work covered and/or specified in the contract documents. To this end, each Bid shall be supported by a statement of the Bidder's experience on the form entitled "Bidder's Experience", which is a part of the contract documents.

QUESTIONS AND COMMENTS. Questions and comments regarding this solicitation must be submitted in writing, to Nicholas Toth, Planner (ntoth@bristolri.gov) and Deborah D'Agostino, Job Captain (DDAgostino@rgb.net) via email no later than Noon EST five (5) business days before the Submittal Deadline. The questioner's company name, address, phone and email, and contact person must be included with the questions or comments. Answers, if any, made by the Town of Bristol, will be posted to the Town's website as an addendum and electronic notification will be sent to all registered, prospective bidders.

REJECTION OF BIDS, WAIVER OF INFORMALITIES. The right is reserved, as the interest of the Town may require, to reject any or all bid proposals, to waive any technical defect or informality in bids received, and to accept or reject any bid or portion thereof. The Town reserves the right to reject the Bid of any Bidder who previously failed to perform adequately for the Town of Bristol or any other governmental agency. The Town expressly reserves the right to reject the Bid of any Bidder who is in default on the payment of taxes, licenses or other monies due the Town of Bristol.

SIGNATURES. An individual who is authorized to bind the Bidder must sign the bid.

<u>SUBMITTAL DEADLINE</u>. The Submittal Deadline is indicated on page 2 of this document. Bids must arrive in the Town Clerk's Office, Town of Bristol, 10 Court Street, Bristol, RI 02809. The receiving time in the Town Clerk's Office will be the governing time for acceptability of bids.

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<u>TAXES, EXEMPT</u>. The Town of Bristol is exempt from Federal Excise and State Sales Tax. If requested, the Town of Bristol will furnish exemption certificates when the successful bidder submits invoices for payment.

TERMS OF THE OFFER. The Town of Bristol reserves the right to negotiate final contract terms with any Bidder selected. The contract between the parties will consist of the Bid together with any modifications thereto, the awarded Bidder's bid, and all modifications and clarifications that are submitted at the request of the Town of Bristol during the evaluation and negotiation process. In the event of any conflict or contradiction between or among these documents, the documents shall control in the following order of precedence: the final executed contract, the Bid, any modifications and clarifications to the awarded Bidder's bid, and the awarded Bidder's bid. Specific exceptions to this general rule may be noted in the final executed contract. Bidder understands and acknowledges that the representations above are material and important, and will be relied on by the Town of Bristol in the evaluation of the bid. Bidder misrepresentation shall be treated as fraudulent concealment from the Town of Bristol of the facts relating to the bid.

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TERMS AND CONDITIONS

ASSIGNMENT OF RIGHTS OR OBLIGATIONS. Except as noted hereunder, Successful Bidder may not assign, transfer or sell any rights or obligations resulting from this solicitation without first obtaining the specific written consent of the Town of Bristol.

<u>ATTORNEY FEES</u>. In the event a suit or action is instituted in connection with any controversy arising out of this contract, the prevailing party shall be entitled to receive, in addition to its costs, such sum as the court may adjudge reasonable as to attorney's fees and costs.

<u>AUTHORITY OF THE TOWN.</u> Subject to the power and authority of the Town of Bristol as provided by law in this contract, the Town of Bristol shall in all cases determine the quantity, quality, and acceptability of the work, materials and supplies for which payment is to be made under this contract. The Town of Bristol shall decide the questions that may arise relative to the fulfillment of the contract or the obligations of the contractor hereunder.

<u>CANCELLATION OF THE CONTRACT</u>. *Without cause*, the Town of Bristol may cancel this contract at any time with thirty- (30) days written notice to the supplier/contractor. *With cause*, the Town of Bristol may cancel this contract at any time with ten- (10) days written notice to the Bidder. Cancellation for cause shall be at the discretion of the Town of Bristol and shall be, but is not limited to, failure to supply the materials, or service specified within the time allowed or within the terms, conditions or provisions of this contract. The successful Bidder may not cancel this contract without prior written consent of the Town of Bristol Town Administrator.

<u>CHANGES IN WORK.</u> The Town of Bristol may, at any time work is in progress, by written order, make alterations in the terms of work as shown in the specifications, require the performance of extra work, decrease the quantity of work, or make such other changes as the Town of Bristol may find necessary or desirable. The Contractor shall not claim forfeiture of contract by reasons of such changes by the Town of Bristol. Changes in work and the amount of compensation to be paid to the Contractor for any extra work as so ordered shall be determined upon mutual agreement with Contractor.

<u>COMPLIANCE WITH OR DEVIATION FROM SPECIFICATIONS</u>. Bidder hereby agrees that the material, equipment or service offered will meet all the requirements of the specifications in this solicitation unless deviations from them <u>are clearly indicated in the Bidder's response</u>. Bidder may submit an attachment entitled "Exceptions to Specifications", which must be signed by Bidder's authorized representative. An explanation must be made for each item in which an exception is taken, giving in detail the extent of the exception and the reason for which it is taken. Bids failing to comply with this requirement will be considered

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non-responsive. Submittal of brochure or other manufacturer literature is desirable but may not be a substitution for this requirement.

<u>CONTRACT INCORPORATION</u>. This contract embodies the entire contract between the Town of Bristol and the Contractor. The parties shall not be bound by or be liable for any statement, representation, promise, inducement or understanding of any kind or nature not set forth herein. No changes, amendments, or modifications of any of the terms or conditions of the contract shall be valid unless reduced to writing and signed by both parties. The complete contract shall include the entire contents of the Bid solicitation, all addenda, all of Bidder's successful submittal, supplemental agreements, change orders, performance bond(s), and any and all written agreements which alter, amend or extend the contract.

<u>FORMATION OF CONTRACT</u>. Bidder's signed Bid and Town of Bristol's written acceptance shall constitute a binding contract.

<u>LAWS GOVERNING CONTRACT</u>. This contract shall be in accordance with the laws of the State of Rhode Island and Providence Plantations. The parties stipulate that this contract was entered into in the County of Bristol, in the State of Rhode Island and Providence Plantations. The parties further stipulate that the County of Bristol, Rhode Island, is the only appropriate forum for any litigation resulting from a breach hereof or any questions risen here from.

<u>SEVERABILITY</u>. If any provisions, or portion of any provision, of this contract are held invalid, illegal or unenforceable, they shall be severed from the contract and the remaining provisions shall be valid and enforceable.

<u>SPECIFICATIONS</u>, <u>CHANGES TO</u>. The parties shall not be bound by or be liable for any statement, representation, promise, inducement or understanding of any kind or nature not set forth herein or by written amendment. No changes, amendments, or modifications of any of the terms or conditions of the specification shall be valid unless reduced to writing and signed by both parties.

<u>SPECIFICATIONS</u>, <u>DEFINITION</u>. The term "specification" or "Bid specification" as used in this solicitation shall be interpreted to mean all the pages that make up this solicitation.

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SPECIAL PROVISIONS FOR SERVICES

<u>CONTRACTOR</u>, <u>DEFINITION</u>. The term "Contractor" refers to the party entering into a contract with the Town of Bristol as a result of this solicitation.

COOPERATION BETWEEN CONTRACTORS. The Town of Bristol reserves the rights to contract for and perform other or additional work on or near the work covered by these specifications. When separate contracts are let within the limits of any one project, each contractor shall conduct his work so as not to interfere with or hinder the progress or completion of the work being performed by other contractors. Contractors working on the same project shall cooperate with each other as directed. Each contractor involved shall assume all liability, financial or otherwise, in connection with his contract and shall protect and save harmless the Town of Bristol from any and all damages or claims that may arise because of inconvenience, delays, or loss experienced by him because of the presence and operations of other contractors working within the limits of the same project.

<u>COORDINATION WITH AGENCIES</u>. The Contractor shall coordinate his activities with the proper regulatory agencies and have their representative on site at the proper times.

<u>DAMAGE</u>. The contractor shall be held responsible for any breakage, loss of the Town of Bristol's equipment or supplies through negligence of the contractor or his employee while working on the Town of Bristol's premises. The contractor shall be responsible for restoring or replacing any equipment, facilities, etc. so damaged. The contractor shall immediately report to the Town of Bristol any damages to the premises resulting from services performed under this contract. Failure or refusal to restore or replace such damaged property will be a breach of this contract.

<u>INSURANCE REQUIREMENT</u>. Within ten (10) consecutive calendar days of award of contract, Successful Bidder must furnish the Town of Bristol with the Certificates of Insurance proving coverage as specified in "*Bidder's Statement Regarding Insurance Coverage*" and naming the Town of Bristol, its officers and agents, Additional Insured by endorsement. The "*Bidder's Statement Regarding Insurance Coverage*" is Attachment C.

<u>REJECTION OF WORK.</u> Contractor agrees that the Town of Bristol has the right to make all final determinations as to whether the work has been satisfactorily completed.

<u>RIGHTS RESERVED</u>. (a) <u>Rejection of Work</u>. Contractor agrees that the Town of Bristol has the right to make all final determinations as to whether the work has been satisfactorily completed. (b) <u>Completion of Work</u>. If Contractor fails to comply with the conditions of the contract, or fails to complete the required work or furnish the required materials within the time

INVITATION FOR BID BID #1065

Rogers Free Library Interior Modification Project

stipulated, the Town of Bristol reserves the right to purchase in the open market, or to complete the required work, at the expense of the Contractor.

INVITATION FOR BID BID #1065

Rogers Free Library Interior Modification Project

MINIMUM BID SPECIFICATIONS

See attached Specifications.

INVITATION FOR BID BID #1065

Rogers Free Library Interior Modification Project

BID DOCUMENTS TO BE RETURNED

The following documents must be completed and submitted on or before the Submittal Deadline for the Bid to be considered complete:

- 1. Bid Form
- 2. Non-Collusion Affidavit
- 3. Bidder's Statement Regarding Insurance Coverage
- 4. Bidder's Statement of Relevant Experience

Additional information to be provided:

- 1. Company ownership. If incorporated, the State in which the company is incorporated and the date of incorporation.
- 2. Location of the company offices.
- 3. Number of employees both locally and nationally.
- 4. Location(s) from which employees will be assigned.
- 5. Name, address, and telephone number of the Bidder's point of contact for a contract resulting from this Bid.
- 6. Company background/history and why Bidder is qualified to provide the services described in this Bid.
- 7. Length of time Bidder has been providing services described in this Bid. Please provide a brief description.

Responses to Bids must be submitted on preprinted forms supplied with this Bid. One (1) original bid marked "MASTER" and one (1) copy must be submitted on or before the Submittal Deadline.

INVITATION FOR BID BID #1065

Rogers Free Library Interior Modification Project

Attachment A

Date:

| BID FORM |
|--|
| Bid Amount: |
| |
| NAME AND ADDRESS OF BIDDING FIRM: |
| |
| |
| |
| |
| I herein agree to abide by all requirements as detailed in the "Invitation for Bid #1065". |
| |
| Signature: |
| Printed Name & Title: |
| |

INVITATION FOR BID BID #1065

Rogers Free Library Interior Modification Project

ATTACHMENT B Non-COLLUSION AFFIDAVIT To Be Completed, Notarized, and Submitted With Bid

| State of Rhode Island County of Bristol | |
|--|--|
| made in the interest of, or on behalf association, organization, or corporation; the Bidder has not directly or indirectly is sham bid, and has not directly or indirectly or Bidder or anyone else to put in a sham Bidder has not in any manner, directly conference with anyone to fix the bid proverhead, profit, or cost element of the badvantage against the public body awar contract; that all statements contained in directly or indirectly, submitted his or has thereof, or divulged information or data in | , Bidder, being first duly sworn, of the party making the foregoing bid that the bid is not of, any undisclosed person, partnership, company, that the bid is genuine and not collusive or sham; that nduced or solicited any other Bidder to put in a false or ctly colluded, conspired, connived, or agreed with any bid, or that anyone shall refrain from bidding; that the or indirectly, sought by agreement, communication, or price of the Bidder or any other Bidder, or to fix any id price, or of that of any other Bidder, or to secure any ding the contract of anyone interested in the proposed the bid are true; and further, that the Bidder has not, her bid price or any breakdown thereof, or the contents relative thereto, or paid, and will not pay, any fee to any ation, organization, bid depository, or to any member or sham bid." |
| Date | (Signed at) |
| Bidder name (Person, Firm, Corp.) | Authorized Representative |
| Address | Representative's Name |
| City, State, Zip | Representative's Title |

INVITATION FOR BID BID #1065

Rogers Free Library Interior Modification Project

ATTACHMENT C

BIDDER'S STATEMENT REGARDING INSURANCE COVERAGE

BIDDER HEREBY CERTIFIES that the Bidder has reviewed and understands the insurance coverage requirements specified in the Invitation for Bid No. 1065, **Rogers Free Library Interior Modification Project**. Should the Bidder be awarded the contract for the work, Bidder further certifies that the Bidder can meet the specified requirements for insurance and agrees to provide the Town with a certificate of insurance which names the Town of Bristol as an Additional Insured for the work specified.

Insurance Required:

- Workman's Compensation in compliance with statutory limits
- Comprehensive General Liability Insurance of at least \$1,000,000.

| Name of Bidder (Person, Firm, or Corporation) | | | | |
|---|--|--|--|--|
| Signature of Bidder's Authorized Representative | | | | |
| Name & Title of Authorized Representative | | | | |
| Date of Signing | | | | |

INVITATION FOR BID BID #1065

Rogers Free Library Interior Modification Project

ATTACHMENT D

BIDDER STATEMENT OF RELEVANT EXPERIENCE

| List three (3) references for which your firm provided service within the last five years. |
|--|
| I hereby certify that I have performed the work listed below. |
| Signature of Bidder |

| DESCRIPTION | DATES | CONTRACT | CUSTOMER | CUSTOMER |
|-------------|-------|----------|----------|-----------|
| | | AMOUNT | CONTACT | TELEPHONE |
| | | | | |
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Phone: (401) 574-8962

TTY Via 711 Fax: (401) 574-8916

02/04/2022

CERTIFICATE OF EXEMPTION

TOWN OF BRISTOL 10 COURT ST BRISTOL RI 02809-2200 Notice ID:

10012430973

THIS IS TO CERTIFY THAT THE ABOVE-NAMED INSTITUTION HAS QUALIFIED FOR EXEMPTION PURSUANT TO THE PROVISIONS OF THE RHODE ISLAND SALES AND USE TAX ACT, CHAPTER 18, TITLE 44, OF THE GENERAL LAWS OF 1956, AS AMENDED, AND IS ACCORDINGLY EXEMPT FROM THE PAYMENT OF THE SALES TAX ON SALES MADE TO IT AND FROM THE USE TAX ON THE STORAGE, USE OR OTHER CONSUMPTION OF TANGIBLE PERSONAL PROPERTY BY IT.

NEENA S. SAVAGE TAX ADMINISTRATOR

CERTIFICATE NUMBER:

235206846

DATE ISSUED:

02/04/2022

EXPIRES:

02/05/2026



Phone: (401) 574-8962

TTY Via 711 Fax: (401) 574-8916

NOTICE

Enclosed is your Certificate of Exemption ("Certificate") issued under Chapter 18, Title 44 of the Rhode Island General Laws.

This Certificate should be kept in your files and COPIES ONLY should be given to your vendors.

You are reminded that this exemption applies <u>ONLY</u> to purchases as are made by the organization itself for its own purposes and not for purchases made by any of its members individually. <u>PAYMENT MUST BE MADE DIRECTLY FROM AND BY THE ORGANIZATION</u>. A COPY OF YOUR CERTIFICATE MUST ACCOMPANY ALL PURCHASES.

An individual member or group of members belonging to the organization must pay the tax when purchasing meals or other tangible personal property for their individual or collective use or consumption.

Please note, pursuant to R.I. Gen. Laws § 44-18-30.1, this Certificate of Exemption expires four (4) years from the date of issuance. A new completed application, with payment for the non-refundable application fee, must be submitted prior to the expiration date set forth on the Certificate. Please allow at least two (2) weeks for processing your application for renewal.

Please notify this office, in writing, of any changes of name or address, as your Certificate should always reflect your current information. Include a copy of the original Certificate with your notification of changes and an updated Certificate of Exemption will be issued.

NEENA S. SAVAGE TAX ADMINISTRATOR

SECTION 00 00 03 - GENETEC SOLE SOURCE DOCUMENT

The town of Bristol R.I. hereby includes the following document indicating Genetec System to be used as the sole source for security so that the library will be compatible with existing systems and facilities within the town.

END OF SECTION 00 00 03



Town of Bristol, Rhode Island

Department of Community Development

10 Court Street Bristol, RI 02809 www.bristolri.gov 401-253-7000

To Whom It May Concern:

Due to the use of Genetec security systems throughout town facilities, the Town of Bristol requests that no substitutions be made for Genetec equipment as specified for the following reasons:

- 1. The Town of Bristol RI requires all security related systems to connect to the Genetec system in the town hall
- 2. The Genetec equipment must be compatible with the Bristol Genetec system in the town hall.
- 3. The access control panels in remote buildings must be manufactured by Genetec
- 4. All video surveillance equipment must be compatible with the Genetec system at the Town Hall.
- 5. All video surveillance equipment must be connected to and programmed into the Genetec system at the town hall. All cameras must meet the requirements of the Genetec system for complete compatibility and software in the Genetec system at the town hall.
- 6. Genetec systems are available under RI MPA 419, under contract for ADT Commercial/Everon

The equipment must be sole sourced from Genetec or Genetec's distribution suppliers and be the most up to date equipment and software that Genetec has in their offerings at the time of installation

Sincerely,

Nicholas Toth Planner/HDC Coordinator Department of Community Development

DOCUMENT

000115 - LIST OF DRAWING SHEETS

1.1 LIST OF DRAWINGS

- A. Drawings: Drawings consist of the Contract Drawings and other drawings listed on the Table of Contents page of the separately bound drawing set titled Rogers Free Library Interior Modifications and April 21, 2025, as modified by subsequent Addenda and Contract modifications.
- B. The General Conditions, Supplementary Conditions and applicable portions of Division 1 of the specifications are a part of this Section, which shall consist of all labor, equipment and materials necessary to complete all project meeting work indicated on the drawings and herein specified.

1.2 CONTRACT LIST OF DRAWINGS:

CIVIL

C001 GENERAL NOTES AND LEGEND

C100 EXISTING CONDITIONS AND SITE PREP. PLAN

C200 SITE PLAN

ARCHITECTURAL

COVER SHEET

G001 ABBREVIATIONS & SYMBOLS

A010 CODE REVIEW

A030 WALL CONSTRUCTION TYPES

D100 DEMOLITION PLAN

D101 DEMOLITION PLAN

D102 DEMOLITION REFLECTED CEILING PLAN & ROOF PLAN

A100 FLOOR PLANS

A101 FLOOR PLANS

A102 ROOF PLAN AND DETAILS

A300 ENLARGED MAKERSPACE PLAN AND ELEVATIONS

A301 ENLARGED MEZZANINE PLAN AND ELEVATIONS

A500 EXTERIOR DETAILS

A600 REFLECTED CEILING PLANS

A800 TYPICAL INTERIOR DETAILS

A810 INTERIOR CASEWORK DETAILS

A900 FINISH SCHEDULES

A901 FINISH PLAN

A910 DOOR & GLAZING SCHEDULES

A920 DOOR DETAILS

PLUMBING

P000 PLUMBING LEGEND & ABREVIATIONS

P202 PLUMBING WASTE & VENT - SECOND FLOOR

P203 PLUMBING WASTE & VENT - THIRD FLOOR

P303 PLUMBING WATER & GAS - THIRD FLOOR

P700 PLUMBING SCHEDULES & DETAILS

P800 PLUMBING SPECIFICATIONS

FIRE PROTECTION

FP000 FIRE PROTECTION LEGEND & ABBREVIATIONS

FP103 FIRE PROTECTION DEMOLITION - THIRD FLOOR

FP203 FIRE PROTECTION - THIRD FLOOR

FP800 FIRE PROTECTION SPECIFICATIONS

MECHANICAL

M000 MECHANICAL LEGENDS & ABBREVIATIONS

M101 MECHANICAL DEMOLITION - FIRST FLOOR

M102 MECHANICAL DEMOLITION - SECOND FLOOR

M103 MECHANICAL DEMOLITION - THIRD FLOOR

M105 MECHANICAL DEMOLITION - ROOF

M201 MECHANICAL - FIRST FLOOR

M202 MECHANICAL - SECOND FLOOR

M203 MECHANICAL - THIRD FLOOR

M205 MECHANICAL - ROOF

M600 MECHANICAL DETAILS

M601 MECHANICAL DETAILS (CONT.)

M700 MECHANICAL SCHEDULES

M800 MECHANICAL SPECIFICATIONS

M801 MECHANICAL SPECIFICATIONS (CONT.)

ELECTRICAL

E100 ELECTRICAL LEGENDS & ABBREVIATIONS

E101 ELECTRICAL DEMOLITION - FIRST FLOOR

E102 ELECTRICAL DEMOLITION - SECOND FLOOR

E103 ELECTRICAL DEMOLITION - THIRD FLOOR

E104 ELECTRICAL DEMOLITION - ROOF

E203 ELECTRICAL LIGHTING - THIRD FLOOR

E301 ELECTRICAL POWER & SYSTEMS - FIRST FLOOR

E302 ELECTRICAL POWER & SYSTEMS - SECOND FLOOR

E303 ELECTRICAL POWER & SYSTEMS - THIRD FLOOR

E304 ELECTRICAL POWER & SYSTEMS - ROOF

E403 ELECTRICAL FIRE ALARM – THIRD FLOOR

E700 ELECTRICAL SCHEDULES

E701 ELECTRICAL DETAILS

E800 ELECTRICAL SPECIFICATIONS

TELECOMMUNICATIONS

TT001 TELECOM LEGEND & ABBREVIATIONS

TT100 TELECOM FIRST FLOOR PLAN

TT101 TELECOM SECOND & THIRD FLOOR PLANS

TT201 TELECOM RISER DIAGRAM

TT301 TELECOM DETAILS

SECURITY

TY001 SECURITY LEGEND AND ABBREVIATIONS

TYD100 SECURITY FIRST FLOOR DEMOLITION PLAN

TYD101 SECURITY SECOND & THIRD FLOOR DEMOLITION PLANS

TY100 SECURITY FIRST FLOOR PLAN

TY101 SECURITY SECOND & THIRD FLOOR PLANS

TY201 SECURITY RISER DIAGRAMS

TY301 SECURITY DETAILS

END OF SECTION 00 01 15

| SECT | ION 00 04 50 - LETTER OF INTENT | |
|---------|--|---|
| TO: | Town of Bristol, Rhode Island Bristol Free Library 525 Hope Street Bristol, Rhode Island 02809 | |
| FOR: | | |
| | | _ |
| This is | s to advise you that the | |
| | (L | egal Name of Surety) |
| Bond | s authorized to do business in the State of Rhod and Labor and Material Payment Bond, AIA Do ontract, for the: | e Island, is prepared to execute a Performance cument A312, each in the amount of 100 percent of |
| | (Legal Name of | General Bidder) |
| should | d they be awarded a contract for the constructio | n of the |
| | , | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | (Name of Surety) |
| | E | y:(Authorized Representative) |
| | | , |
| | Т | itle: |
| | Pr | nt or Type name: |
| Date: | | |
| | | |
| | | |

END OF SECTION 000450

SECTION 00 09 00 - BIDDING INTERPRETATION REQUEST FORM

TO: RGB Architects 50 Holden Street

Providence, Rhode Island 02908

Project: Rogers Free Library Interior Modifications

In accordance with Article 3 of the Instructions to Bidders, the undersigned Bidder requests clarification and/or interpretation of the following:

| Referring to Drawing No | | ; and/or: | | |
|-------------------------|------------|-----------|---|--|
| Specification Section | , Page No. | , Line No | ; | |
| | | | | |
| Referring to Drawing No | | | | |
| Specification Section | , Page No. | , Line No | ; | |
| | | | | |
| | | | | |
| Referring to Drawing No | | ; and/or | | |
| Specification Section | | | | |
| | | | | |
| | | | | |
| | | | | |
| Requested By: | | | | |
| Address of Bidder: | | | | |
| ı | Date: | | | |
| | | | | |

END OF SECTION 00 09 00

SECTION 00 52 00 - AGREEMENT FORM

AIA Document A101 Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, 2017 Edition, as amended, forms the basis of the Contract between the Owner and the Contractor and is included, following this page, as an integral part of the Bid Documents. Provisions that are not so amended or supplemented remain in full force and effect.

The Contractor shall note that Section 008000 entitled "Supplementary Conditions" has additionally modified AIA A201 - General Conditions of the Contract for Construction and therefore accepts those modifications.

END OF SECTION 00 52 00

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the day of in the year (In words, indicate day, month and year.)

BETWEEN the Owner:

(Name, legal status, address and other information)

and the Contractor:

(Name, legal status, address and other information)

for the following Project: (Name, location and detailed description)

Templates

The Architect:

(Name, legal status, address and other information)

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An Additions and Deletions Report that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A101™–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201™–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

TABLE OF ARTICLES

- THE CONTRACT DOCUMENTS
- THE WORK OF THIS CONTRACT
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
- **CONTRACT SUM**
- **PAYMENTS**
- **DISPUTE RESOLUTION**
- 7 **TERMINATION OR SUSPENSION**
- MISCELLANEOUS PROVISIONS
- **ENUMERATION OF CONTRACT DOCUMENTS**

EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:

(Check one of the following boxes.)

| L |] | The date of this Agreement. |
|---|---|---|
| [|] | A date set forth in a notice to proceed issued by the Owner. |
|] |] | Established as follows: (Insert a date or a means to determine the date of commencement of the Work.) |

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:

(Check one of the following boxes and complete the necessary information.)

Init.

| [] | Not later than () | calendar days from the date o | f commencement | of the Work. |
|-----------------------------------|---|--|---|--|
| [] | By the following dat | e: | | |
| to be comple | ct to adjustments of the ted prior to Substantial of such portions by the | Completion of the entire Wor | the Contract Documents, the Contractor s | ments, if portions of the Work are shall achieve Substantial |
| Port | ion of Work | Substantial | Completion Date | |
| | Contractor fails to achi- assessed as set forth in | | provided in this S | ection 3.3, liquidated damages, if |
| § 4.1 The Ow | CONTRACT SUM ner shall pay the Contr e Contract Sum shall be | actor the Contract Sum in cure (\$), subject to additions | rent funds for the C and deductions as | Contractor's performance of the provided in the Contract |
| § 4.2 Alternate § 4.2.1 Altern | es ates, if any, included in | the Contract Sum: | | |
| Item | | Price | | |
| execution of | this Agreement. Upon a | ed below, the following alternative acceptance, the Owner shall is conditions that must be met for | sue a Modification | to this Agreement. |
| Item | | Price | | Conditions for Acceptance |
| § 4.3 Allowan | ces, if any, included in allowance.) | the Contract Sum: | | |
| Item | | Price | | |
| § 4.4 Unit price (Identify the in | | rice and quantity limitations, | if any, to which the | e unit price will be applicable.) |
| Item | | Units a | nd Limitations | Price per Unit (\$0.00) |
| | ed damages, if any: and conditions for liqui | dated damages, if any.) | | |
| § 4.6 Other: (Insert provisi | ons for bonus or other | incentives, if any, that might 1 | esult in a change i | to the Contract Sum.) |

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

- § 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.
- § 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:
- § 5.1.3 Provided that an Application for Payment is received by the Architect not later than the day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the day of the month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than () days after the Architect receives the Application for Payment.

(Federal, state or local laws may require payment within a certain period of time.)

- § 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.
- § 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.
- § 5.1.6 In accordance with AIA Document A201TM—2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:
- § 5.1.6.1 The amount of each progress payment shall first include:
 - .1 That portion of the Contract Sum properly allocable to completed Work;
 - .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
 - .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.
- § 5.1.6.2 The amount of each progress payment shall then be reduced by:
 - .1 The aggregate of any amounts previously paid by the Owner;
 - .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;
 - .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
 - .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and
 - .5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

User Notes:

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

§ 5.1.7.1.1 The following items are not subject to retainage:

(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:

(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:

(Insert any other conditions for release of retainage upon Substantial Completion.)

- § 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.
- § 5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 Final Payment

- § 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when
 - .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and
 - .2 a final Certificate for Payment has been issued by the Architect.
- § 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

§ 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located. (Insert rate of interest agreed upon, if any.)

%

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker. (If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

| § 6.2 Binding | Dispute | Resolution |
|---------------|---------|------------|
|---------------|---------|------------|

| For any Claim subject to, but not resolved by, mediation pur | suant to Article 15 of AIA Document A201–2017, the |
|--|--|
| method of binding dispute resolution shall be as follows: | |
| (Check the appropriate box) | |

| [|] | Arbitration pursuant to Section 15.4 of AIA Document A201-2017 |
|---|---|--|
| [|] | Litigation in a court of competent jurisdiction |
| [|] | Other (Specify) |

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

§ 7.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows: (Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:

(Name, address, email address, and other information)

§ 8.3 The Contractor's representative:

(Name, address, email address, and other information)

(1483026772)

§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101TM_2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

- § 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101TM_2017 Exhibit A, and elsewhere in the Contract Documents.
- § 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203TM–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:

(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

§ 8.7 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 AIA Document A101TM_2017, Standard Form of Agreement Between Owner and Contractor
- .2 AIA Document A101TM–2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201TM–2017, General Conditions of the Contract for Construction
- .4 AIA Document E203TM—2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:

(Insert the date of the E203-2013 incorporated into this Agreement.)

| .5 | Drawings | | | |
|----|------------------|-------|-------|-------|
| | Number | Title | Date | |
| .6 | Specifications | | | |
| | Section | Title | Date | Pages |
| .7 | Addenda, if any: | | | |
| | Number | Date | Pages | |
| | | | | |

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.8 Other Exhibits:

(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

(1483026772)

| | [] AIA Document E204 TM _2017, Sustainable Projects Exhibit, dated as indicated below: (Insert the date of the E204-2017 incorporated into this Agreement.) | | | | | |
|---|---|----------------------|---|--|-------------------------------------|--|
| | [] | The Sustainability I | Plan: | | | |
| | Title | | Date | Pages | | |
| | [] | Supplementary and | other Conditions of the Contra | act: | | |
| | Doc | ument | Title | Date | Pages | |
| sample forms, the Contractor's bid or p requirements, and other information fur proposals, are not part of the Contract documents should be listed here only if This Agreement entered into as of the day and year first | | | ormation furnished by the Owne e Contract Documents unless e here only if intended to be part | er in anticipation of rec enumerated in this Agre | ceiving bids or cement. Any such | |
| OWNER (Sa | ignature) | | CONTRACTO | OR (Signature) | | |
| (Printed name and title) | | | (Printed nar | (Printed name and title) | | |

User Notes:

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SECTION 00 52 10 - GENERAL CONDITIONS CONTRACT

AIA Document A201 - 2017 General Conditions of the Contract for Construction

The DRAFT document as amended forms the basis of the Contract for Construction between the Owner, Architect, and Contractor. This is included, following this page, as a part of the Bid Documents. Provisions not so amended or supplemented remain in full force and effect.

END OF SECTION 00 52 10

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

THE OWNER:

(Name, legal status and address)

THE ARCHITECT:

(Name, legal status and address)

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- 1 GENERAL PROVISIONS
- 2 OWNER
- 3 CONTRACTOR
- 4 ARCHITECT
- 5 SUBCONTRACTORS
- 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
- 7 CHANGES IN THE WORK
- 8 TIME
- 9 PAYMENTS AND COMPLETION
- 10 PROTECTION OF PERSONS AND PROPERTY
- 11 INSURANCE AND BONDS
- 12 UNCOVERING AND CORRECTION OF WORK
- 13 MISCELLANEOUS PROVISIONS
- 14 TERMINATION OR SUSPENSION OF THE CONTRACT
- 15 CLAIMS AND DISPUTES

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An Additions and Deletions Report that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

- § 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.
- § 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.
- § 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

- § 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.
- § 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

- § 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.
- § 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203TM—2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203TM_2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document

G202TM–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

- § 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.
- § 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

- § 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.
- § 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.
- § 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.
- § 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

- § 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.
- § 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

- § 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.
- § 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.
- § 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.
- § 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

- § 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.
- § 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.
- § 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

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- § 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.
- § 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.
- § 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

- § 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.
- § 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.
- § 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

- § 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.
- § 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

- § 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.
- § 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

- § 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.
- § 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.
- § 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

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§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.
- § 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

- § 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.
- § 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.
- § 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

- § 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.
- § 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.
- § 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and

delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

- § 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.
- § 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.
- § 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.
- § 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.
- § 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.
- § 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.
- § 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.
- § 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.
- § 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.
- § 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.
- § 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely

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upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

- § 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.
- § 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

- § 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.
- § 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

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- § 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.
- § 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.
- § 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.
- § 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.
- § 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.
- § 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.
- § 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.
- § 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.
- § 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.
- § 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

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ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

- § 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.
- § 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

- § 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.
- § 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.
- § 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.
- § 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

- § 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.
- § 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.
- § 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.
- § 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

- § 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.
- § 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.
- § 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

- § 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:
 - .1 The change in the Work;
 - .2 The amount of the adjustment, if any, in the Contract Sum; and
 - .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

- § 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.
- § 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.
- § 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:
 - .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
 - .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
 - .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
 - .4 As provided in Section 7.3.4.
- § 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

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- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom. workers' compensation insurance, and other employee costs approved by the Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor
- Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.
- § 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.
- § 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.
- § 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.
- § 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.
- § 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.
- § 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

- § 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.
- § 8.1.2 The date of commencement of the Work is the date established in the Agreement.
- § 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

- § 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.
- § 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.
- § 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

- § 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.
- § 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.
- § 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

- § 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.
- § 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

- § 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.
- § 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

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- § 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.
- § 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.
- § 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

- § 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.
- § 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

- § 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of
 - .1 defective Work not remedied;
 - .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
 - .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;

- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.
- § 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.
- § 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.
- § 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

- § 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.
- § 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.
- § 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.
- § 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.
- § 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.
- § 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.
- § 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.
- § 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

- § 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.
- § 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.
- § 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.
- § 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.
- § 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

- § 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.
- § 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

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- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.
- § 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.
- § 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.
- § 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.
- § 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.
- § 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.
- § 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

- § 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.
- § 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will

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promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

- § 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.
- § 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.
- § 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.
- § 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

- § 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.
- § 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.
- § 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.
- § 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or

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expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

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§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during

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that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

- § 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.
- § 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.
- § 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.
- § 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.
- § 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

- § 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.
- § 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

- § 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.
- § 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

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§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall cease operations as directed by the Owner in the notice;

- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work;
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

User Notes:

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

- § 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.
- § 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.
- § 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

- § 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.
- § 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.
- § 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.
- § 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

- § 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.
- § 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.
- § 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

User Notes:

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

SECTION 00 61 00 - BID BOND FORM

BID BOND

AIA Document A310 - Bid Bond - 2010 Edition is included, following this page, as an integral part of the Bid documents, and issues of this form signed and executed by the successful Bidder and Surety, will be bound into the executed Contract copies of the Project Manual.

END OF SECTION

Bid Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

OWNER:

(Name, legal status and address)

BOND AMOUNT: \$

PROJECT:

(Name, location or address, and Project number, if any)

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An Additions and Deletions Report that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

| | (Contractor as Principal) | (Seal) |
|-----------|---------------------------|--------|
| (Witness) | (Title) | |
| | (Surety) | (Seal) |
| (Witness) | (Title) | 770 |

Signed and sealed this day of,

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SECTION 00 61 10 - PERFORMANCE BOND AND PAYMENT BOND

PERFORMANCE BOND

AIA Document A312 - Performance Bond - 2010 Edition is included, following this page, as an integral part of the Bid documents, and issues of this form signed and executed by the successful Bidder and Surety, will be bound into the executed Contract copies of the Project Manual.

PAYMENT BOND

AlA Document A312 - Payment Bond - 2010 Edition is included, following this page, as an integral part of the Bid Documents, and issues of this form, signed and executed by the successful Bidder and Surety, will be bound into the executed Contract copies of the Project Manual

END OF SECTION

Performance Bond

| CONTRACTOR: | SURETY: |
|-----------------------------------|--|
| (Name, legal status and address) | (Name, legal status and principal place of business) |
| | |
| | |
| | |
| OWNER: | |
| (Name, legal status and address) | |
| | |
| | |
| | |
| CONSTRUCTION CONTRACT | |
| Date: | |
| Amount: \$ | |
| Description: | |
| (Name and location) | |
| | |
| | |
| BOND | |
| Date: | |
| | auturat Data) |
| (Not earlier than Construction Co | ontract Date) |
| Amount: \$ | |
| Modifications to this Bond: | None See Section 16 |
| Widdiffications to this Bond. | None See Section to |
| CONTRACTOR AS PRINCIPAL | SURETY |
| Company: (Corporate Seal) | Company: (Corporate Seal) |
| | Company. (Corporate Seat) |
| Signature: | Signature: |
| Name and | Name and |
| Title: | Title: |
| (Any additional signatures appear | r on the last page of this Performance Bond.) |
| | |
| (FOR INFORMATION ONLY— | |
| AGENT or BROKER: | OWNER'S REPRESENTATIVE: |
| | (Architect, Engineer or other party:) |

ADDITIONS AND DELETIONS:

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This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

- § 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
- § 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.
- § 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after
 - .1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default:
 - .2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety;
 - .3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.
- § 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.
- § 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
- § 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;
- § 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;
- § 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or
- § 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:
 - .1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
 - .2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.
- § 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.
- § 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the

2

Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

- .1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
- .2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and
- .3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
- § 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.
- § 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.
- § 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.
- § 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
- § 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.
- § 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

- § 14.1 Balance of the Contract Price. The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
- § 14.2 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.
- § 14.3 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.
- § 14.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
- § 14.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.
- § 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

| (Space is provided below for add CONTRACTOR AS PRINCIPAL | itional signatures of add | ded parties, other than those of SURETY | appearing on the cover page., |
|---|---------------------------|--|-------------------------------|
| Company: | (Corporate Seal) | Company: | (Corporate Seal) |
| Signature: | | Signature: | |
| Name and Title: Address: | | Name and Title: Address: | |

Payment Bond

| CONTRACTOR: (Name, legal status and address) | SURETY: (Name, legal status and principal place of business) |
|--|---|
| | |
| | |
| OWNER: | |
| (Name, legal status and address) | |
| | |
| | |
| CONSTRUCTION CONTRACT | |
| Date: | |
| Amount: \$ | |
| Description: | |
| (Name and location) | |
| | |
| | |
| BOND | |
| Date: | |
| (Not earlier than Construction Contract | et Date) |
| | |
| Amount: \$ | |
| Modifications to this Bond: | None See Section 18 |
| CONTRACTOR AS PRINCIPAL | SURETY |
| Company: (Corporate Seal) | Company: (Corporate Seal) |
| (11) | |
| Signature: | Signature: |
| Name and | Name and |
| Title: | Title: |
| (Any additional signatures appear on the | |
| | |
| (FOR INFORMATION ONLY — Name | |
| AGENT or BROKER: | OWNER'S REPRESENTATIVE: |
| | (Architect, Engineer or other party:) |

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An Additions and Deletions Report that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

User Notes:

- § 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
- § 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
- § 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.
- § 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.
- § 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:
- § 5.1 Claimants, who do not have a direct contract with the Contractor,
 - have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - have sent a Claim to the Surety (at the address described in Section 13).
- § 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).
- § 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.
- § 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
- § 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
- § 7.2 Pay or arrange for payment of any undisputed amounts.
- § 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.
- § 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
- § 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

- § 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.
- § 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.
- § 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
- § 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.
- § 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
- § 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

- § 16.1 Claim. A written statement by the Claimant including at a minimum:
 - .1 the name of the Claimant;
 - .2 the name of the person for whom the labor was done, or materials or equipment furnished;
 - .3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
 - .4 a brief description of the labor, materials or equipment furnished;
 - .5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 - .6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
 - .7 the total amount of previous payments received by the Claimant; and
 - .8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.
- § 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.
- § 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

- § 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
- § 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.
- § 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.
- § 18 Modifications to this bond are as follows:

| (Space is provided below for add CONTRACTOR AS PRINCIPAL | litional signatures of ad | ded parties, other than those of SURETY | appearing on the cover page.) |
|--|---------------------------|---|-------------------------------|
| Company: | (Corporate Seal) | Company: | (Corporate Seal) |
| Signature: | | Signature: | |
| Name and Title: Address: | | Name and Title: Address: | |

User Notes:

SECTION 007400 - LABOR REQUIREMENTS

Wage Determination

- Bids are subject to Rhode Island General Law 37-13 as determined by the Rhode Island Department of Labor and Training.
- 2. Davis Bacon and related Acts. The contractor must comply with the minimum rates for wages for laborers and mechanics as determined by the Secretary of Labor in accordance with the provisions of the Davis-Bacon and Related Acts. The Contractor must provide written certification that they and their subcontractors have complied with the requirements of the Davis-bacon and related Acts for the period during which the work was performed.
- 3. See Town of Bristol, R.I. Invitation to Bid document for additional requirements.

END OF SECTION 00 74 00

SECTION 00 80 00 - SUPPLEMENTARY CONDITIONS

A. INTRODUCTION

The following supplements modify the "General Conditions of the Contract for Construction", AIA Document A201-2017. Where a portion of the General Conditions is modified or deleted by the Supplementary Conditions, the unaltered portions shall remain in effect.

B. OTHER CONDITIONS

Should additional conditions be required for the work of this Project, they shall be included in that portion of this Project Manual directly following these Supplementary Conditions; and with their inclusion become a part of the Contract for this work.

C. REFERENCE TO DIVISION 1

Where provisions of the General Conditions relate to project administrative or work-related requirements of the Contract, those paragraphs are may have additional Requirements or Conditions, specified in Division 1, "General Requirements" of the Specifications.

ARTICLE 1 - GENERAL PROVISIONS

Add the following sub-paragraphs to 1.1:

- 1.1.9 Miscellaneous Definitions.
 - 1.1.9.1 The term "product" includes materials, systems and equipment.
 - 1.1.9.2 Where "as shown", "as indicated", "as detailed", or words of similar import are used, it shall be understood that references to the drawings accompanying this specification is made, unless otherwise stated. Where "as directed", "as required", "as permitted", "approved", "acceptance", or words of similar import are used, it shall be understood that the direction, requirement, permission, approval or acceptance of the Architect is intended, unless stated otherwise. As used herein, "provide" shall be understood to mean "provide complete in place" that is, "furnish and install".

Add the following Paragraph 1.7:

1.7 AVAILABILITY OF CADD DRAWING FILES

- 1.7.1 After award and upon request, the electronic "Computer-Aided Drafting and Design (CADD)" drawing files will be made available to the Contractor for his/her/their use in preparation of his/her/their construction coordination and shop drawings related to the referenced contract, and subject to the following terms and conditions. Coordinate with Section 013300 SUBMITTAL PROCEDURES of the Project Manual.
 - 1.7.1.1 The files and/or disk(s) may contain information submitted, in part, by others. While this information is believed to be reliable, there may be occasional inconsistencies due to the transfer of electronic data from our master file to the disk(s), as well as in the transfer of

- disk data to your system. Thus, RGB is not responsible for its accuracy, or for errors or omissions, which may have been incorporated into the resultant documents, nor does it make any warranties, expressed or implied, of merchantability or for fitness for a particular purpose.
- 1.7.1.2 Data contained on these electronic files shall not be used for any purpose other than as a convenience in coordination of the work and the preparation of the shop drawings for the referenced project.
- 1.7.1.3 Any other use, without the express written permission of the Architect, shall be at the sole risk of the Contractor and without liability or legal exposure to the Architect.
- 1.7.1.4 The Contractor shall make no claim and waives to the fullest extent permitted by law, any claim or cause of action of any nature against the Architect, its agents or sub consultants that may arise out of, or in connection with, the Contractor's or his agent's use of these electronic files. By opening the files, the Contractor shall, to the fullest extent permitted by law, agrees to fully indemnify and hold the Architect and his consultants harmless against all damages, liabilities or costs, including reasonable attorney's fees and defense costs, arising out of or resulting from the use of these electronic files.
- 1.7.1.5 These electronic CADD drawing files are not construction documents. Differences may exist between the CADD files and the corresponding construction documents. The Architect makes no representation regarding the accuracy or completeness of the electronic CADD files, nor does it make representation to the compatibility of these files with the Contractors hardware or software.
- 1.7.1.6 In the event that a conflict arises between the signed and sealed construction documents prepared by the Architect and the furnished CADD files, the signed and sealed construction documents shall govern.
- 1.7.1.7 The Contractor is responsible for determining if any conflict exists. Use of these CADD files does not relieve the Contractor of his contractual obligations and requirement to fully comply with all the contract documents, including and without limitation, the need to check, confirm and coordinate the work of all contractors, suppliers, and agents for the project.
- 1.7.1.8 If the Contractor uses, duplicates and/or modifies these electronic CADD files for use in producing shop drawings, coordination drawings, and data related to this contract, all previous indication of ownership (seals, logos, signatures, initials, and dates) shall be removed.
- 1.7.1.9 These files shall be made available via website transfer, at the Owner's discretion.
 - 1.7.1.9.1 Files will be made available on the a cloud-base file sharing site. No documents will be e-mailed.

ARTICLE 2 - OWNER

2.3 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.3.6 Change to read:

"Prior to the start of construction, the Contractor will be furnished, free of charge, 1 set of PDF files of the Drawings and Project Manual, complete with Addendum, for his use in the execution of the Contract. Additional sets as may be required, by the Contractor, pursuant section 1.5.2, and shall be procured by the Contractor at his costs. The Contractor shall print and utilize one of these sets of documents for the sole purpose of maintaining "record documents".

ARTICLE 3 - CONTRACTOR

3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

Add the following sub-paragraphs to 3.2:

- 3.2.5 In case of an inconsistency between Drawings and Specifications or within either Document not clarified by addendum, provide the better quality or greater quantity of Work in accordance with the Architect's interpretation.
- 3.2.6 Omissions from the drawings and specifications of items obviously needed to perform the work, such as attachments, bolts, hangers, and other fastening devices shall not relieve the Contractor from furnishing and installing same. It shall be the duty of the Contractor to procure from the Architect all necessary interpretations of the designs, drawings and specifications.

3.4 LABOR AND MATERIALS

Add the following sub-paragraph 3.4.0:

3.4.0 Refer to Specification Section entitled, SUMMARY OF THE WORK, for additional provisions on the subject. References to Section 3.4 elsewhere in the Contract Documents shall also read as referring to that Section of the Specifications.

3.6 TAXES

Add the following sub-paragraph 3.6.0:

- 3.6.0 Refer to Specification Section entitled, SUMMARY OF THE WORK, for additional provisions on the subject. References to Section 3.6 elsewhere in the Contract Documents shall also read as referring to that Section of the Specifications.
- 3.7 PERMITS, FEES, NOTICES, AND COMPLIANCE WITH LAWS

Add the following sub-paragraph 3.7.0:

- 3.7.0 Refer to Specification Section entitled, SUMMARY OF THE WORK, for additional provisions on the subject. References to Section 3.7 elsewhere in the Contract Documents shall also read as referring to that Section of the Specifications.
- 3.8 ALLOWANCES

Add the following sub-paragraph 3.8.0:

3.8.0 Refer to Specification Section entitled, ALLOWANCES, for additional provisions on the subject. References to Section 3.8 elsewhere in the Contract Documents shall also read as referring to that Section of the Specifications.

3.9 SUPERINTENDENT

Add the following sub-paragraph to 3.9.2

3.9.2.1 Employ a project superintendent acceptable to the Owner and Architect. Prior to the assignment or replacement of a superintendent, submit a resume to the Architect for acceptance review.

3.10 CONTRACTOR'S CONSTRUCTION AND SUBMITTAL SCHEDULES

Add the following sub-paragraph 3.10.0

3.10.0 Refer to Specification Section entitled, CONSTRUCTION PROGRESS DOCUMENTATION, for additional provisions on the subject. References to Section 3.10 elsewhere in the Contract Documents shall also read as referring to that Section of the Specifications.

3.11 DOCUMENTS AND SAMPLES AT THE SITE

Add the following sub-paragraph 3.11.0

3.11.0 Refer to Specification Section entitled, SUMMARY OF THE WORK, for additional provisions on the subject. References to Section 3.11 elsewhere in the Contract Documents shall also read as referring to that Section of the Specifications.

3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

Add the following sub-paragraph 3.12.0

3.12.0 Refer to Specification Section entitled, SUBMITTAL PROCEDURES, for additional provisions on the subject. References to Section 3.12 elsewhere in the Contract Documents shall also read as referring to that Section of the Specifications.

3.13 USE OF SITE

Add the following sub-paragraph 3.13.0

3.13.0 Refer to Specification Section entitled, SUMMARY OF THE WORK, for additional provisions on the subject. References to Section 3.13 elsewhere in the Contract Documents shall also read as referring to that Section of the Specifications.

3.14 CUTTING AND PATCHING

Add the following sub-paragraph 3.14.0

3.14.0 Refer to Specification Section entitled, SUMMARY OF THE WORK, for additional provisions on the subject. References to Section 3.14 elsewhere in the Contract Documents shall also read as referring to that Section of the Specifications.

3.15 CLEANING UP

Add the following sub-paragraph 3.15.0

3.15.0 Refer to Specification Section entitled, CLEANING and Specification Section entitled CLOSEOUT PROCEDUES for additional provisions on the subject. References to Section 3.15 elsewhere in the Contract Documents shall also read as referring to those Sections of the Specifications.

ARTICLE 7 - CHANGES IN THE WORK

7.1 GENERAL

Add new sub-paragraphs:

- 7.1.4 The amount of credit to be allowed by the Contractor to the Owner for any deletion or change which results in a net decrease in the Contract Sum will be the amount of the actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in any one change, the allowance for overhead and profit shall be figured on the basis of the net increase, if any, with respect to that change.
- 7.1.5 The reasonable (as stated herein) allowance for overhead and profit combined, included in the total cost to the Owner, shall be based upon the following schedule:
 - 7.1.5.1 For the Contractor, for any work performed by his own forces, 10% of the cost;
 - 7.1.5.2 For each Sub-Contractor involved, work performed by his own forces, 10% of the cost;
 - 7.1.5.3 For the Contractor, for work performed by his sub-contractor, 5% of the amount due the sub-contractor.
- 7.1.6 Subsequent to the approval of a Change Order, whether involving a change in Contract Sum, contract time or both, no additional claim related to that matter will be considered by the Owner. A change incorporated into a Change Order is therefore, all inclusive, and includes such factors as project impact, schedule "ripple" effect or other items which may pertain to such change.

ARTICLE 8 - TIME

8.3 DELAYS AND EXTENSIONS OF TIME

Add new sub-paragraphs:

- 8.3.4 Landscape work and corresponding seasonally limited work may be scheduled for later completion, as mutually agreed upon, and completed under approved working conditions.
- 8.3.5 When designated by the Architect, additional time of one month will be allowed for the principal purpose of removing materials and equipment from the site and for the final cleaning up operations of the site work.

ARTICLE 9 - PAYMENTS AND COMPLETION

9.2 SCHEDULE OF VALUES.

Add the following sub-paragraph 9.2.1:

9.2.1 Refer to Specification Section entitled, PAYMENT PROCEDURES, for additional provisions on the subject. References to Section 9.2 elsewhere in the Contract Documents shall also read as referring to that Section of the Specifications.

9.3 APPLICATIONS FOR PAYMENT

9.3.1 Add the following sentence:

"The form of Application for Payment shall be AIA Document G702 GMP -2021, APPLICATION AND CERTIFICATION FOR PAYMENT, supported by AIA Document G703, Continuation Sheet. Prior to the submission of the completed (typed) application, submit a draft copy for review by the Architect."

9.4 CERTIFICATES FOR PAYMENT

Add new sub-paragraphs:

- 9.4.3 First Certificate for Payment The Architect will process this Certificate, only after he has received (1) the information required of Article 7 of the Instructions to Bidders, (2) Certification that the Contractor is currently maintaining Record Drawings, (3) decisions on options indicated in Section 010100 (if any), (4) submissions required in Section 013000, and (5) is adhering to the requirements of Article 3 of the General Conditions and Supplementary Conditions.
- 9.4.4 Second and Subsequent Certificates for Payment The Architect will process the second certificate only after receipt of (1) Certificates that contractor is currently maintaining record drawings, (2) Release of Liens, (3) Certification of foundation and building layout survey data if specified in Section 010100, and (4) all proposed materials and color samples have been submitted for Architect's approval and color selections. Certification as to maintenance of Record Drawings and Releases of Lien will accompany subsequent applications, otherwise the Architect will not process the respective Certificate for Payment.

9.6 PROGRESS PAYMENTS

Add the following to sub-paragraph to 9.6.1:

- 9.6.1.1 The Owner shall make payments on account of this Contract as provided herein as follows: On or about the 15th day of each month, 90 percent of the value, based on the Contract prices for labor and materials incorporated in the work and of materials suitably stored at the site thereof or at some other location agreed upon, in writing, by the parties up to the first day of that month, as estimated by the Architect, less the aggregate of previous payments; and upon substantial completion of the entire work, a sum sufficient to increase the total payments to 95% of the Contract Price.
- 9.6.1.2 Such reduction shall occur upon the Owner's approval and after receipt of AIA Document G707A (Consent of Surety to Reduction).

9.8 SUBSTANTIAL COMPLETION

Add the following to sub paragraph 9.8.1:

9.8.1.1 "Prior to issuance of a Certificate of Substantial Completion, and in addition to the requirements herein, the Contractor and his sub-contractors shall submit: (1) their respective certificates of contract document compliance; (2) warranties and guarantees; (3) bonds; (4) certificates and affidavits; (5) operating manuals, report of Owner instructions and test results; (6) project record documents, including record drawings; (7) extra materials and samples (as specified) required for Owner; and (8) Occupancy Permit, if required."

9.10 FINAL COMPLETION AND FINAL PAYMENT

Add the following to sub paragraph 9.10.1:

"Prior to final inspection, and in addition to the requirements herein, submit: (1) Contractor's Affidavits (AIA Document G706 and G706A); and Consent of Surety (AIA Document G707)."

Add new Paragraphs:

9.11 RELEASES OF LIEN

- 9.11.1 The Contractor shall submit Releases of Lien from all sub-contractors and material suppliers indicating payment(s) received from the previous applications. Certificates for Payment will not be processed unless these releases are included therewith.
- 9.11.2 Immediately satisfy any lien or encumbrance which, because of any act or default of the Contractor is filed against the premises, and indemnify and save the Owner harmless against all resulting loss and expenses, including attorney's fees. In addition, moneys due under this Contract, as may be considered necessary by the Owner, may be retained by the Owner until all such suits, claims for damages or expenses as aforesaid shall been settled and paid.
- 9.11.3 The statement on the Standard AIA Form G702, Certificate for Payment, which certifies that "all bills are paid for which previous certificates for payment were issued" shall be notarized by a Notary Public currently licensed to practice in the State in which the Project is located.

9.12 LIQUIDATED DAMAGES.

9.12.1 The Owner will suffer financial loss if the Project is not completed (Substantial and Final) on the dates set forth in the Contract Documents. The Contractor (and his Surety) shall be liable for and shall pay to the Owner the sums stipulated in the Bid Form as fixed, agreed, and liquidated damages for each calendar day of delay until the Work is Completed.

ARTICLE 11 - INSURANCE AND BONDS

11.1 CONTRACTOR'S LIABILITY INSURANCE

Add new sub-paragraph under 11.1.1:

11.1.1.9 Liability insurance shall include all major divisions of coverage and be on a comprehensive general liability basis including:

Premises-Operations (including (X-C-U)

Independent contractor's protective

Blanket contractual

Owned, non-owned and hired motor vehicles

Broad form property coverage (including explosion, collapse and underground)

Add the following sub-paragraph to 11.1.2:

11.1.2.1 The insurance required by sub-paragraph 11.1.1 shall be written for not less than the following, or greater if required by law:

Worker's Compensation:

State and Federal (where applicable) - Statutory

Employer's Liability - \$500,000.

Comprehensive General Liability (including Premises-Operation; Independent Contractors' Protective; Products and Completed Operations; Broad Form Property Damages; Contractual and Personal Injury)

Bodily Injury/Property Damage:

\$1,000,000. - Each Occurrence

\$2,000,000. - Annual Aggregate

Products and Completed Operations to be maintained for two (2) years after final payment.

Property Damage Liability Insurance will provide X, C or U coverage as applicable.

Comprehensive Automobile Liability:

Bodily Injury/Property Damage:

\$1,000,000. - Each Occurrence

Add the following sub-paragraph to 11.1.3:

11.1.3.1 The Contractor shall furnish one copy each of Certificates of Insurance, acceptable to the Owner, herein required for each copy of the Agreement which shall be specifically set forth evidence of all coverage required by sub-paragraphs 11.1.1, 11.1.2 and 11.1.3. The form of the Certificate shall be acceptable to the Owner. The Contractor shall furnish to the Owner copies of any endorsements that are subsequently issued amending coverage or limits.

11.2 OWNER'S LIABILITY INSURANCE

Change paragraph 11.2. to read:

11.2. The Contractor shall furnish the Owner, through the Architect, an insurance certificate providing Owner's Protective Liability extended to include the interests of the Architect, and to protect the Owner and the Architect, The Robinson Green Beretta Corporation, from any liability which might be incurred against them as result of any operation of the Contractor or his sub-contractors or their employees. Such insurance shall be written for the same limits as the Contractor's Liability Insurance, and shall include the same coverage.

11.3 PROPERTY INSURANCE.

Change sub-paragraph 11.3.1 to read:

- 11.3.1 The Contractor shall purchase and maintain property insurance upon the entire Work at the site to the full insurable value thereof. Such insurance shall be in a company or companies against which the Owner has no reasonable objection. This insurance company shall include the interests of the Owner, the Contractor, Sub-contractors and Sub-subcontractors in the Work and shall insure against the perils of fire and extended coverage and shall include "all risk" insurance for physical loss or damage including, without duplication of coverage, theft, vandalism, and malicious mischief. If not covered under all risk insurance or otherwise provided in the Contract Documents, the Contractor shall effect and maintain similar property insurance on portions of the Work stored off the site or in transit when such portions of the Work are to be included in an application for Payment under Sub-paragraph 9.3.2.
 - 11.3.1.1 The form of policy for this coverage shall be completed value.
 - 11.3.1.2 If by the terms of this insurance any mandatory deductibles are required, or if the Contractor should elect, with concurrence of the Owner, to increase the mandatory deductible amounts, the Contractor shall be responsible for payment of the amount of the deductible in the event of a paid claim.

11.3.4 Delete this sub-paragraph in its entirety.

Change sub-paragraph 11.3.6 to read:

11.3.6 Before an exposure to loss may occur, the Contractor shall file with the Owner two certified copies of the policy or policies providing this Property Insurance coverage, each containing those endorsements specifically related to the Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire until at least thirty (30) days' prior written notice has been given to the Contractor.

ARTICLE 12 - UNCOVERING AND CORRECTION OF WORK

12.2 CORRECTION OF WORK

12.2.2. AFTER SUBSTANTIAL COMPLETION

Change sub-paragraphs under 12.2.2 to read:

12.2.2.1 Change all references of 'one year' to read 'two years' and 'one-year' to read 'two-years'

12.2.2.2 Change all references of 'one-year' to read 'two-years'

12.2.2.3 Change all references of 'one-year' to read 'two-years'

ARTICLE 13 - MISCELLANEOUS PROVISIONS

13.4 TESTS AND INSPECTIONS

Add the following sub-paragraph to 13.4.1

13.4.1.1 Refer to Specification Section 01 40 00 for the extent of other inspection and testing services to be included as part of this Contract.

Add the new paragraph 13.8:

13.8 SPECIAL WARRANTIES

- 13.8.1 The Contractor shall provide and pay for all the requirements outlined in this section (13.8) as part of the Project Base Bid.
- 13.8.2 Service Contracts will be captured in the Project Schedule of Values. The costs associated with the Service Contract Work will not be subject to Retainage and will be billed quarterly for the duration of the Service Contract period, unless otherwise approved in writing by the Owner.

13.8.3 Warranty Provisions:

- 13.8.3.1 As prescribed in Paragraph 12.2.2.1 of AIA Document A201- 2017 as amended by the Contract Agreement the Contractor shall provide a minimum of a two (2) year warranty period on all systems, repairs, materials and workmanship incorporated in the project. Systems, repairs, materials and workmanship that has been prescribed as having warranties for periods greater than two (2) years by the individual specification sections shall be carried at the warranty period prescribed by that individual reference provided a minimum of two (2) years are provided in all aspects of the warranty/guarantee provisions.
- 13.8.3.2 Additionally, as prescribed in 12.2.2.2 of AIA Document A201-2017 as amended by the

Contract Agreement, the two (2) year period for correction of work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of Work.

13.8.3.3 Additionally as provided in 12.2.2.3 of AIA Document A201-2017 as amended by the Contract Agreement states upon completion of any Work under or pursuant to Paragraph 12.2 that the two (2) year correction period in connection with the Work requiring correction shall be renewed and recommence. The obligations under Paragraph 12.2 shall cover any repairs and replacement to any part of the Work or other property that is damaged by the defective Work and Work impacted by such corrective action.

Add the following ARTICLE 16:

ARTICLE 16 - EQUAL OPPORTUNITY

- 16.1 THE CONTRACTOR POLICIES OF EMPLOYMENT
 - 16.1.1 The Contractor shall maintain policies of employment as follows:

- 16.1.1.1 The Contractor and all Sub-contractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin or age. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex, national origin or age. 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 setting forth the policies of non-discrimination.
- 16.1.1.2 The Contractor and all Sub-contractors shall, in all solicitations or advertisements for employees placed by them on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, national origin or age.

END OF SECTION 00 80 00

SECTION 01 00 50 - GENERAL REQUIREMENTS FOR EXISTING FACILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The General Conditions, Supplementary Conditions and applicable portions of Division 1 of the Specification are a part of this Section, which shall consist of all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation and other facilities and services necessary for the proper execution and completion of the work, whether temporary or permanent and whether or not incorporated or to be incorporated in the work; and as related to the project or projects defined in the Bidding Requirements.
- B. The specification format used herein is in accordance with MASTERFORMAT, CSI (2020 Format) and in no way intends to restrict this Contractor from expediting his work as he sees fit, nor is there any intention of segregating the units of work as related to specific trades involving jurisdictional problems.

1.2 CONTRACTOR'S DUTIES

- A. The Contractor is responsible for all personnel involved in the work, including those of his direct employ, his sub-contractors and suppliers of materials and equipment and/or labor. The Technical Specifications have been divided for convenience only to cover the scope of work, and where reference to a particular contractor is noted, it is for convenience only. The Owner and Architect only recognize one Contractor as party to this Contract.
- B. As it is impractical to enumerate every piece of equipment, device and/or accessory required for proper operation of the indicated systems specified within their respective Sections or Divisions ensure Project Manual; it is intended that all materials, systems, and/or equipment, required to insure proper operation of the equipment, device, and/or accessory, be provided as a part of the Work of this Project so the specified work or system functions, and/or performs as required by the specification. To infer the intent is otherwise, is to render the specified work or system less than required.
- C. Except as specifically noted, provide and pay for:
 - 1. Labor, materials and equipment.
 - 2. Tools, construction equipment and machinery.
 - 3. Other facilities and services necessary for proper execution and completion of the Work.
- D. Pay sales, consumer, use and similar taxes for the Work or portions thereof.
- E. Secure and pay for, as necessary for proper execution and completion of the Work, and as applicable at time of receipt of Bids:
 - 1. Permits.
 - 2. Government fees.
 - 3. Licenses.
- F. Give the required notices.
- G. Comply with codes, ordinances, rules, regulations, orders and other legal requirements of public authorities which bear on the performance of the Work.

- H. Promptly submit written notice to the Architect of observed variance of Contract Documents from legal requirements.
- Lay out all work and be responsible for all lines, elevations, measurements of the building, utilities and site work executed under the Contract. Verify the figures shown before laying out the Work and be responsible for any error resulting from failure to do so. Employ a competent registered engineer or registered land surveyor, approved by the Architect, for establishing all lines, levels and dimensions, and place at the disposal of the Architect, as required for checking purposes.
- J. Enforce strict discipline and good order among employees. Do not employ persons not skilled in assigned tasks.
- K. Notify all trades, sub-contractors and suppliers of all designated alternatives and be responsible for their coordination.
- At your option, certain indicated materials and/or procedures are specified herein to be used in lieu of other indicated materials and/or procedures, at no change in Contract Price. Such options should be analyzed and coordinated during the bidding period, so that the selection of any may immediately be brought to the Architect's attention, once the Contract is awarded (within thirty days thereafter).
- 1.3 SCOPE OF THE WORK: Includes but is not limited to:

A. INTERIOR:

1. Modification to the existing third floor library book stack area to create a Maker Space room and renovations to the existing Mezzanine areas and other interior modifications and new HVAC system as noted in Bidding Documents.

1.4 SPECIAL CONDITIONS

- A. The Contractor must schedule the Work, in the various rooms with the Owner, a minimum of seven days in advance.
- B. The Owner will make available to the Contractor requested spaces, to be determined during the course of the Work. Upon substantial completion of the work in these areas and a minimal punch list, the Owner will make additional spaces available to the Contractor. Punch list completion must be scheduled to permit notification of tenants.
- C. Miscellaneous work in other areas of the building must be scheduled seven (7) days in advance and approved by the Owner.
- D. The Contractor is responsible to physically isolating all work areas, to protect building users, while maintaining safe egress.
- E. The Contractor shall maintain a professional relationship with all building occupants, employees and other occupants. All incidents with the building occupants must be promptly reported to the Owner or the Owner's Representative. The Owner will resolve all issues with all employees and other occupants.

F. Use of premises:

1. No storage of materials in the building. (Locate trailer in area designated by the Owner and repair all damaged areas upon completion of the work.)

- 2. Provide office trailer for the workforce.
- 3. No porta johns. Review bathroom facilities designated for construction use with owner prior to the start of construction.
- 4. No smoking on the site or within the buildings.
- 5. Daily clean-up required.
- 6. Weekly cleaning library bathrooms used by construction staff. for the duration of the project. Coordinate the cleaning schedule with the owner.
- 7. Use of on-site utilities, electricity and water permitted. Do not overtax existing systems.
- 8. Major movement of materials must be scheduled so as to minimize inconvenience of the Building occupants. Coordinate with the Owner.
- 9. Notify the Owner of utility interruptions a minimum of thirty-six (36) hours in advance.

G. OSHA:

- 1. These construction documents, and the joint and several phases of construction hereby contemplated, are to be governed, at all times, by the applicable portions of the Federal Laws, including but not limited to, the latest amendments of the following:
 - a. Williams-Steiger Occupational Safety and Health Act of 1970, Public Law 91-956.
 - b. Part 1910 Occupational Safety and Health Standards, Title 29, Code of Federal Regulations, as amended to date.
 - c. Part 1926 Safety and Health Regulations for Construction, Title 29, Code of Federal Regulations, as amended to date.
- 2. This Project, the Contractor and his sub-contractors shall, at all times, be governed by applicable Chapters of Title 29, Code of Federal Regulations, Part 1926 Safety and Health Regulations for Construction, as amended to date.
 - a. Note: Furnish the Owner and Architect copies of all accident reports.

H. Dig Safe:

1. All excavations near underground public utility facilities shall be performed in accordance with Connecticut State Law.

I. Emergencies:

Should tornado, hurricane, gale or heavy wind warnings be issued, take precautions to minimize the danger to persons, to the work, and to the adjacent property. Damage caused to any part of the work shall be rectified or replaced to the complete satisfaction of the Architect and at no expense to the Owner. Injury to personnel or damage to adjacent property because of the work shall be the complete responsibility of the Contractor, and he accepts exclusive responsibility for same.

J. Loading:

1. Do not load any part of the work involved in this Contract, during construction, with a load greater than it is calculated to carry with safety. Should any accidents or damage occur through any violation of this requirement, the Contractor shall be held responsible under his Contract and Bond. When, in the opinion of the Architect, portions of the structure appear to be overloaded, it shall be the Contractor's responsibility to prove otherwise, or the Contractor shall follow the instructions of the Architect in connection with reduction of the loads.

1.5 PROJECT RECORD DOCUMENTS

- A. Maintain at job site, one copy of:
 - 1. Contract Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Reviewed Shop Drawings.
 - 5. Record Drawings.

- 6. Change Orders.
- 7. Other modifications to Contract.
- 8. Approved materials, samples and colors.
- B. Store documents in approved field construction office, apart from documents used for construction.
 - 1. Provide files and racks for storage of documents.
 - 2. File documents in accordance with Project Filing Format of MASTERFORMAT.
 - 3. Maintain documents in clean, dry, legible condition.
 - 4. Do not use record documents for construction purposes.
 - 5. Make documents available at all times for inspection by Architect and Owner.

C. Recording changes:

- 1. Provide a red pen or pencil for all marking.
- 2. Keep record documents current.
- 3. Do not permanently conceal any work until required information has been recorded.
- 4. Contract Drawings: Legibly mark to record actual construction and the following:
 - a. Record field changes of dimensions and details.
 - b. Record changes made by Change Order or Field Order.
 - c. Record details not on original Contract Drawings.
- 5. Specifications and Addenda: Legibly mark up each Section to record the following:
 - a. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
 - b. Changes made by Change Order and Field Order.
 - c. Other matters and materials not previously specified.
- 6. Shop Drawings: Maintain as record documents; legibly annotate drawings to record changes after review.

1.6 TRANSPORTATION AND HANDLING

- A. Transport all materials and equipment on legally approved conveyances as required or recommended by the respective manufacturer or supplier.
- B. Receive and handle all materials and equipment, at the project site, by conveyances or methods as recommended by the respective manufacturer or supplier.
- C. Coordinate delivery of equipment and materials when two or more trades, contractors or suppliers, are involved.
- D. Remove from the site any material or item of equipment damaged during the transportation or handling process, and immediately replace it at no additional cost to the Owner.

1.7 STORAGE AND PROTECTION

- A. Store all materials and equipment as recommended by the respective manufacturer or supplier, including the following minimum requirements.
- B. Upon receipt of such materials and equipment, check, distribute, store and safeguard in a clean, dry, ventilated location.
- C. Maintain all storage areas in a clean and orderly condition at all times.

D. Immediately replace any material or item of equipment damaged, due to inadequate storage protection, at no additional cost to the Owner.

1.8 CUTTING AND PATCHING

- A. Execute cutting, fitting or patching work required to:
 - 1. Make several parts fit properly.
 - 2. Remove and replace defective work.
 - 3. Remove and replace work not conforming to the Contract Documents.
- B. Install specified work in existing construction.
 - 1. In addition to the Contract requirements, upon written instructions from Architect:
 - a. Uncover work to provide for Architect's observation of covered work, as required by General Conditions.
 - b. Remove samples of installed materials for testing as required by the General Conditions.
 - 2. Do not endanger any work by cutting or altering work, or any part of it.
 - Do not cut or alter the work of another Contractor without written permission of the Architect.
 - 4. Prior to cutting which affects structural safety of Project, or work of another Contractor, submit written notice to Architect requesting consent to proceed with cutting.
 - 5. Prior to cutting and patching, done on instruction of the Architect, submit cost estimate.
 - 6. Should conditions of work, or schedule, indicate change of materials or methods, submit written recommendations to the Architect including:
 - a. Conditions indicate change.
 - b. Recommendations for alternative materials or methods.
 - c. Submittals required for Substitutions.
- C. Submit written notice to the Architect, designating time work will be uncovered, to provide for observation.
- D. Payment for costs caused by ill-timed or defective work, or work not conforming to the Contract Documents, including costs for additional services of Architect will be borne by the Contractor.
- E. Contractor Inspection:
 - 1. Inspect existing conditions of work, including elements subject to movement or damage during:
 - a. Cutting and patching.
 - 2. After uncovering work, inspect conditions affecting installation of new products.
- F. Preparation: (prior to cutting)
 - 1. Provide protection for other portions of the Project.
- G. Performance: Perform all work of fitting, adjustment, cutting, patching, finishing, and restoration to perfectly match the quality as specified throughout these specifications.

1.9 CONNECTING TO AND USE OF EXISTING

- A. Demolish and remove from site all existing construction work as indicated. Do such work in a neat and orderly manner so as not to endanger the lives of the working force nor cause damage to adjacent surfaces indicated to remain.
- B. Remove portions of existing work as indicated or required, and perfectly patch, match and tie into the new work.
- C. Repair existing walls, floors, ceilings, partitions, doors, frames, etc., where required for tieing into, including existing systems such as electrical or mechanical, etc.
- D. If existing conditions, indicated to remain, include defective work, deteriorated or rotted materials, immediately notify the Architect. Do not conceal such materials.
- E. Relocate and remove certain existing items, facilities and equipment, as indicated. Items designated to be removed, and not be re-used, shall remain the property of the Owner and placed on the site, where directed by the Owner.
- F. Quality of Work/Responsibility to Match Existing:
 - 1. Perfectly match the existing building finishes for all new work, unless otherwise specified or shown. Such matching includes quality, style, character, finish and color. Likewise, repair or replace, in exact likeness to the existing, any existing surfaces, materials, fixtures, or items damaged by the process of completing the new work.

1.10 CONTRACTOR USE OF PREMISES

- A. Confine operations at site to areas permitted by:
 - 1. Law.
 - 2. Ordinances.
 - 3. Permits.
 - 4. Contract Documents.
- B. Do not unreasonably encumber the site with materials and equipment.
- C. Assume full responsibility for protection and safekeeping of products stored on the premises.
- D. Move any stored products which interfere with operations of Owner or other Contractor.
- E. Obtain and pay for use of additional storage or work areas needed for operations.

1.11 PARTIAL OWNER OCCUPANCY

- A. Schedule early completion of designated areas for Owner's usage prior to Substantial Completion of the entire Project.
- B. Contractor provides:
 - 1. Access for Owner personnel.
 - 2. Operation of mechanical and electrical systems.
- C. Prior to occupancy, execute Certificate of Substantial Completion for designated areas.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 00 50

SECTION 01 10 00 - SUMMARY OF THE WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The General Conditions, Supplementary Conditions and applicable portions of Division 1 of the Specification are a part of this Section, which shall consist of all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation and other facilities and services necessary for the proper execution and completion of the work, whether temporary or permanent and whether or not incorporated or to be incorporated in the work; and as related to the project or projects defined in the Bidding Requirements.
- B. The specification format used herein is in accordance with MASTERFORMAT, CSI (2020 Format) and in no way intends to restrict this Contractor from expediting his work as he sees fit, nor is there any intention of segregating the units of work as related to specific trades involving jurisdictional problems.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: Bristol Free Library Interior Modifications
B. Project Location: 525 Hope Street Bristol, R.I. 20809

C. Owner: Town of Bristol. Rhode Island

D. Owner's Representative: To be determinedE. Architect: RGB Architects

F. Architect Address: 50 Holden Street Providence, RI 02908

G. Contractor: To be determined

1.3 SUMMARY OF THE WORK

A. The scope of the work on this project includes but is not limited to:

Modifications to the existing third floor book stack area to create a Maker Space room. Renovations to the existing Mezzanine area. Capital improvements to the interior and exterior of the building. New yard drains and brick path at the west side of the property. The addition of 4 rooftop units as well as upgrades and modifications to the HVAC system throughout the entire library. New roofing at the flat area of the 2006 library building.

B. Order of Work:

The mechanical scope of work will take place as the first phase of the project. This work is indicated on the "M" series of drawings; M000 through M801, totaling 15 drawings. The electrical associated with disconnecting and powering the mechanical equipment will also be part of the first phase. The drawings containing information associated with this work are E000, E101, E102, E103, E104, E301, E302, E303, E304, E700, E701, E800. The balance of architectural, mechanical, plumbing and fire protection (all drawings) will be considered to be the second phase.

C. CONTRACTOR'S DUTIES

 The Contractor is responsible for all personnel involved in the work, including those of his direct employ, his sub-contractors and suppliers of materials and equipment and/or labor. The Technical Specifications have been divided for convenience only to cover the scope

- of work, and where reference to a particular contractor is noted, it is for convenience only. The Owner and Architect only recognize one Contractor as party to this Contract.
- 2. As it is impractical to enumerate every piece of equipment, device and/or accessory required for proper operation of the indicated systems specified within their respective Sections or Divisions of the Project Manual; it is intended that all materials, systems, and/or equipment, required to insure proper operation of the equipment, device, and/or accessory, be provided as a part of the Work of this Project so the specified work or system functions, and/or performs as required by the specification. To infer the intent is otherwise, is to render the specified work or system less than required.
- 3. Except as specifically noted, provide and pay for:
 - a) Labor, materials and equipment.
 - b) Tools, construction equipment and machinery.
 - c) Water, heat and utilities required for construction.
 - d) Other facilities and services necessary for proper execution and completion of the Work.
- D. The town of Bristol, RI is tax exempt from sales tax on products permanently incorporated in the Work. See Certificate of Exemption form.
- E. The town of Bristol, RI is exempt from local permit fees.
- F. Secure, as necessary for proper execution and completion of the Work, and as applicable at time of receipt of Bids:
 - 1. Permits.
 - The obtaining of the construction permits is the responsibility of the Contractor, unless noted otherwise.
 - 2. Government fees (state or other non-local fees).
 - 3. Licenses.
- G. Give required notices for operations which may disturb the functions of adjacent facilities.
- H. Comply with codes, ordinances, rules, regulations, orders and other legal requirements of public authorities which bear on the performance of the Work.
- I. Promptly submit written notice, within five business days of discovery, to the Architect of observed variance of Contract Documents from legal requirements.
- J. Verify the figures shown before laying out the Work and be responsible for any error resulting from failure to do so.
- K. Enforce strict discipline and good order among employees. Do not employ persons not skilled in assigned tasks.
- L. Notify all trades, sub-contractors and suppliers of all designated alternatives and be responsible for their coordination.
- M. At your option, certain indicated materials and/or procedures are specified herein to be used in lieu of other indicated materials and/or procedures, at no change in Contract Price. Such options should be analyzed and coordinated during the bidding period, so that the selection of any may immediately be brought to the Architect's attention, once the Contract is awarded (within thirty days thereafter).
- 1.4 HEALTH AND SAFETY PRECAUTIONS

A. OSHA:

SECTION 01 10 00

- 1. These construction documents, and the joint and several phases of construction hereby contemplated, are to be governed, at all times, by the applicable portions of the Federal Laws, including but not limited to, the latest amendments of the following:
 - a. Williams-Steiger Occupational Safety and Health Act of 1970, Public Law 91-956;
 - b. Part 1910 Occupational Safety and Health Standards, Title 29, Code of Federal Regulations, as amended to date.
 - c. Part 1926 Safety and Health Regulations for Construction, Title 29, Code of Federal Regulations, as amended to date.
- 2. This Project, the Contractor and his sub-contractors shall, at all times, be governed by applicable Chapters of Title 29, Code of Federal Regulations, Part 1926 Safety and Health Regulations for Construction, as amended to date.
 - a. Note: Furnish the Owner and Architect copies of all accident reports.

1.5 PROJECT RECORD DOCUMENTS

- A. Maintain at job site, one copy of:
 - 1. Contract Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Reviewed Shop Drawings.
 - 5. Record Drawings.
 - 6. Change Orders.
 - 7. Other modifications to Contract.
 - 8. Field Test Reports.
 - 9. Approved materials, samples and colors.
- B. Store documents in approved field construction office, apart from documents used for construction.
- C. Provide files and racks for storage of documents.
 - 1. Provide a red pen or pencil for all marking.
- D. File documents in accordance with Project Filing Format of MASTERFORMAT.
- E. Maintain documents in clean, dry, legible condition.
- F. Do not use record documents for construction purposes.
- G. Make documents available at all times for inspection by Architect and Owner.
- H. Recording changes:
 - 1. Keep record documents current.
 - 2. Do not permanently conceal any work until required information has been recorded.
 - 3. Contract Drawings: Legibly mark to record actual construction and the following:
 - a. Record changes made by Change Order or Field Order.
 - b. Record details not on original Contract Drawings.
 - 4. Specifications and Addenda: Legibly mark up each Section to record the following:
 - a. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
 - b. Changes made by Change Order and Field Order.
 - c. Other matters and materials not previously specified.
 - 5. Shop Drawings: Maintain as record documents; legibly annotate drawings to record changes after review.

1.6 TRANSPORTATION AND HANDLING

- A. Transport all materials and equipment on legally approved conveyances as required or recommended by the respective manufacturer or supplier.
 - 1. Obtain permits, as required.
- B. Receive and handle all materials and equipment, at the project site, by conveyances or methods as recommended by the respective manufacturer or supplier.
- C. Coordinate delivery of equipment and materials when two or more trades, contractors or suppliers, are involved.
- D. Remove from the site any material or item of equipment damaged during the transportation or handling process and immediately replace it at no additional cost to the Owner.

1.7 STORAGE AND PROTECTION

- A. Store all materials and equipment as recommended by the respective manufacturer or supplier, including the following minimum requirements.
- B. Upon receipt of such materials and equipment, check, distribute, store and safeguard in a clean, dry, ventilated location.
- C. Maintain all storage areas in a clean and orderly condition at all times.
- D. Immediately replace any material or item of equipment damaged, due to inadequate storage protection, at no additional cost to the Owner.

1.8 CUTTING AND PATCHING

- A. Execute cutting, including excavating, fitting or patching work required to:
 - Make several parts fit properly.
 - 2. Remove and replace defective work.
 - 3. Remove and replace work not conforming to the Contract Documents.
 - 4. Remove samples of installed work, as specified, for testing.
 - 5. Install specified work in existing construction.
- B. In addition to the Contract requirements, upon written instructions from Architect:
 - 1. Uncover work to provide for Architect's observation of covered work, as required by General Conditions.
 - 2. Remove samples of installed materials for testing as required by the General Conditions.
- C. Do not endanger any work by cutting or altering work, or any part of it.
- D. Do not cut or alter the work of another Contractor without written permission of the Architect.
- E. Prior to cutting which affects structural safety of Project, or work of another Contractor, submit written notice to Architect requesting consent to proceed with cutting.
- F. Prior to cutting and patching, done on instruction of the Architect, submit written cost estimate.
- G. Should conditions of work, or schedule, indicate change of materials or methods, submit written recommendations to the Architect and Owner including:

- 1. Conditions indicate change.
- 2. Recommendations for alternative materials or methods.
- 3. Submittals required for Substitutions.
- 4. Impact on operations and maintenance, both long and short term.
- H. Submit written notice to the Architect and Owner, designating time work will be uncovered, to provide for observation.
- I. Payment for costs caused by ill-timed or defective work, or work not conforming to the Contract Documents, including costs for additional services of Architect or other costs to the Owner will be borne by the Contractor.
- J. Contractor Inspection:
 - 1. Inspect existing conditions of work, including:
 - a. Cutting and patching.
 - 2. After uncovering work, inspect conditions affecting installation of new products.
- K. Preparation: (prior to cutting)
 - 1. Provide appropriate protection to fully protect other portions of the Project from dust, fumes, humidity, etc.
- L. Performance: Perform all work of fitting, adjustment, cutting, patching, finishing, and restoration to perfectly match the quality as specified throughout these specifications by trade persons skilled in the work being performed.

1.9 OWNER-FURNISHED PRODUCTS

- A. Where the Owner furnished and/or Owner furnished and installed products or equipment is specified, the Contractor is responsible to verify and coordinate, with the Owner, the extent of the Work under this Contract, associated with such product or equipment.
- B. Owner's duties:
 - 1. Schedule delivery date, with supplier, in accordance with the Construction Schedule, as developed with both the Architect and Owner in regard to furnished products.
 - 2. Obtain installation drawings and instructions.
- C. Contractor's duties:
 - Designate required delivery date for each product in accordance with the Construction Schedule, as developed with both the Architect and Owner in regard to furnished products.
 - 2. Promptly inspect delivered products, report damaged or defective products.
 - 3. Handle at site, including uncrating and storage.
 - 4. Protect from damage.
 - 5. The Contractor shall endeavor to work with the Owner in their schedule to accommodate the work. It is expected that work will include, but not be limited to: Furnishings, Communications, Security, Audio-Visual and Technology, Equipment.
 - 6. Repair or replace items damaged as a result of Contractor's operations.

1.10 CONTRACTOR USE OF PREMISES

- A. Confine operations at site to areas permitted by:
 - 1. Law.
 - 2. Ordinances.

- 3. Permits.
- 4. Contract Documents.
- B. Do not unreasonably encumber the building interior with materials and equipment.
- C. Assume full responsibility for protection and safekeeping of products stored on the premises.
- D. Move any stored products which interfere with operations of Owner or other Contractor.
- E. Obtain and pay for use of additional storage or work areas needed for operations.
- F. Limit use of site for work and storage within confines of the Project Limit Line.
- G. Use of Site: Limit use of Project site to work in areas or areas within the Contract limits indicated. Do not disturb portions of the Project site beyond areas in which the work is indicated.
 - 1. Limits: Confine construction operations to construction areas indicated on drawings and allowed by the Owner.
 - 2. Driveways, Walkways and Entrances: Keep driveways, loading areas 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 storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.

1.11 COORDINATION WITH OCCUPANTS

- A. Owner Occupancy: Owner will occupy site and existing building during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
 - Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
 - 2. Notify the Owner not less than 72 hours in advance of activities that will affect Owner's operations.
- B. Schedule early completion of designated areas for Owner's usage prior to Substantial Completion of the entire Project.
- C. Contractor provides:
 - 1. Access for Owner personnel.
 - 2. Operation of mechanical and electrical systems.
- D. Prior to occupancy, execute Certificate of Substantial Completion for designated areas.

1.12 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 - 1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Contractor to coordinate work hours with Owner.
 - 1. Full operation of facility to be maintained during construction.

SECTION 01 10 00 ROGERS FREE LIBRARY

C. 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's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
 - 1. Notify Owner not less than two days in advance of proposed disruptive operations.
 - 2. Obtain Owner's written permission before proceeding with disruptive operations.
- E. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet of entrances, operable windows, or outdoor-air intakes.
- F. Controlled Substances: Use of tobacco products and other controlled substances within the existing building and/or on Project site is not permitted.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 10 00

SECTION 012000 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General Conditions, Supplementary Conditions and applicable portions of Division 1 of the specification are a part of this Section, which shall consist of all labor, equipment and materials necessary to complete all project meeting work indicated on the drawings and herein specified.

1.2 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Summary of the Work: Section 010100.
- B. Construction Schedules: Section 013000.
- C. Submittal Procedures 0133000

1.3 PRE-INSTALLATION CONFERENCES:

- A. Audio-Visual Equipment Pre-Installation Conference: Division 11.
- B. Security Systems and Cameras Pre-Installation Conference: Division 28.

1.4 PRECONSTRUCTION MEETING

- A. Scheduled, by the Architect, within fifteen days after Notice to Proceed.
- B. Attendance:
 - 1. Owner or Representatives.
 - 2. Architect and his Consultants.
 - 3. Contractor.
 - 4. Major Sub-contractors.
 - 5. Safety Representative.

C. Minimum Agenda:

- 1. Distribution and discussion of:
 - a. List of Major Sub-contractors.
 - Tentative Construction Schedule.
- 2. Critical work sequencing.
- 3. Relation and coordination of Contractors.
- 4. Designation of personnel responsible.
- 5. Processing of field decisions and Change Orders.
- 6. Adequacy of distribution of Contract Documents.
- 7. Submittal of shop drawings, project data and samples.
- 8. Procedures for maintaining record documents.
- 9. Use of Premises:
 - a. Office and storage areas.

- b. Owner's requirements.
- 10. Major equipment deliveries and priorities.
- 11. Housekeeping procedures.
- 12. Procedures for Project Closeout, including "punch list" preparation and "Substantial Completion" requirements.

1.5 PROGRESS MEETINGS

- A. Scheduled, agendas prepared and administered by the Contractor.
 - Distribute written notice and agendas of Regular and Called Meetings, three days in advance of meeting date.
 - 2. Make physical arrangements for meetings.
 - 3. Preside at meetings.
 - 4. Record minutes, including significant proceedings and decisions.
 - 5. Distribute copies to all attendees, within three days after the meeting.
- B. Architect will attend meetings to ascertain that Work is expedited consistent with Construction Schedule and with the Contract Documents.
- C. Schedule Regular Meetings on a day and time agreeable to all parties.
- D. Hold Called Meetings as progress of the Work dictates.
- E. Location of meetings, as indicated in the Notice.
- F. Attendance:
 - 1. Owner or Representatives, when required.
 - 2. Architect and his Consultants, as required.
 - Contractor
 - 4. Sub-contractors, as pertinent to the agenda.
- G. Minimum Agenda:
 - 1. Review and approve minutes of previous meeting.
 - 2. Review Work progress since last meeting.
 - 3. Note field observations, problems and decisions.
 - 4. Identify problems which impede planned progress.
 - 5. Review off-site fabrication problems.
 - 6. Develop corrective measures and procedures to regain planned schedule.
 - 7. Revise Construction Schedule as required.
 - 8. Plan progress during next work period.
 - 9. Coordinate projected progress with other Contractors.
 - 10. Review submittal schedules, expedite as required to maintain schedule.
 - 11. Maintaining quality and work standards.
 - 12. Review changes proposed by the Owner for:
 - Effect on Construction Schedule.
 - b. Effect on Completion Schedule.
 - 13. Complete other current business.
 - Review Project Closeout procedure.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012000

SECTION 01 22 18 - UNIT PRICE FORM

UNIT PRICES:

Submit this completed section with the bid form if there is no location to record unit price costs on the bid form.

The undersigned agrees that the following unit prices are applicable for additional work required from that as specified or shown on the Contract Documents. The prices herein established are for additional work and include the net cost plus overhead and profit. The contractor's fees listed under (A) items will apply to account for pricing.

The following Unit Prices will constitute the basis for additions to the Contract as may be required during the life of the Contract:

LIST OF UNIT PRICES

| No. | ITEM | UNIT | ADDITIONS | DEDUCTIONS |
|-----|----------------------------|----------|-----------|------------|
| 1 | Wood component replacement | 1 ln. ft | | |

- Wood Component replacement: Removal and replacement of deteriorated wood components.
 Pertaining to the underlying blocking and or framing. New solid pressure treated wood item to match
 existing in size shape and configuration. Demolished materials to be removed and properly disposed
 of offsite.
 - A. Additions: Contractor shall be compensated by the Owner \$__/\ Per 1 \text{ In. ft. for each additional linear foot of wood framing repair, as confirmed by the Architect and submitted to the Owner in writing.

| No. | ITEM | UNIT | ADDITIONS | DEDUCTIONS |
|-----|-----------------|-----------|-----------|------------|
| 2 | Steel Roof Deck | 10 sq. ft | | |

- 2. Steel Roof Deck: Unforeseen deteriorated steel roof deck removal & and replacement (w/ new 1 ½" galvanized 20-gauge steel deck). New deck to match existing in size shape and configuration. Demolished materials to be removed and properly disposed of offsite.
 - A. Additions: Contractor shall be compensated by the Owner <u>\$</u> / Per 10 sq. ft. for additional square foot of steel deck repair, as confirmed by the Architect and submitted to the Owner in writing.

END OF SECTION

SECTION 01 23 00 - ALTERNATES

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 alternates.

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
 - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into 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 indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.
- C. Execute accepted alternates under the same conditions as other work of the Contract.
- D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Add Alternate 1

- 1. Base Bid: Existing to remain as is. No change.
- 2. Add Alternate: Labor and material to remove existing window gasket and replace with new window gasket. 2006 building addition, second floor, right double hung window at mulled window unit located at the south exterior wall at the puzzle area as noted on 2/A101 (southwest corner on the opposite side of elevator).

B. Add Alternate 2

- 1. Base Bid: Existing to remain as. No change.
- 2. Alternate: Labor and material to remove any rotten or deteriorated wood section of exterior wood sill and wood trim at the existing windows of the 1877 library building. Replace it with a new pressure treated wood trim to match existing profile. Seal any open connections, prime and paint to match existing. G.C. to confirm size and quantity in the field. See 8/A500.

C. Add Alternate 3

- 1. Base Bid: Existing to remain as. No change.
- 2. Alternate: Labor and material to adjust floor door closers at all existing interior glass panel doors at the second and third floor. Doors 05, 20, 25, 26, 33, 35, 36, 37, and 74. Provide any needed parts and accessories as needed. G.C. to confirm final door number, count and needed parts in field prior to bid. Review adjusted closer with owner in field to confirm their approval of the adjustment.

END OF SECTION 01 23 00

SECTION 01 25 00 - SUBSTITUTION 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 substitutions.
- B. Related Requirements:
 - 1. Division 01 Section "Alternates" for products selected under an alternate.
 - 2. Divisions 02 through 33 Sections for specific requirements and limitations for substitutions.

1.3 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 an advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies 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 CSI Form 13.1A
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - b. Coordination 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 substitution 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 and 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.
- Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
- j. Detailed comparison of Contractor's construction schedule using proposed substitution 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.
- I. 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.
- Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor through Construction Manager of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven 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

1.5 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.

1.6 PROCEDURES

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

PART 2 - PRODUCTS

2.1 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.
 - 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:
 - 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: Generally, not allowed unless otherwise indicated.
- C. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after the Notice to Proceed and/or the Notice of Award. 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 iurisdiction.
 - 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.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 25 00

SECTION 01 26 00 - 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 Requirements:

1. Division 01 Section "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the 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." Form.

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. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within 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.
 - 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. Use available total float before requesting an extension of the Contract Time.
 - e. Quotation Form: Use CSI Form 13.6D, "Proposal Worksheet Summary," and Form 13.6C, "Proposal Worksheet Detail."

- 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.
 - 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.
 - 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. Use available total float before requesting an extension of the Contract Time.
 - 6. Comply with requirements in Division 01 Section "Substitution Procedures" if the proposed change requires substitution of one product or system specified.
 - 7. Proposal Request Form: Use CSI Form 13.6A, "Change Order Request (Proposal)," with attachments CSI Form 13.6D, "Proposal Worksheet Summary," and Form 13.6C, "Proposal Worksheet Detail."

1.5 CHANGE ORDER PROCEDURES

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

1.6 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. The Construction Change Directive contains a complete description of changes in the Work. It also designates a 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.
 - After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 26 00

SECTION 01 29 00 - 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. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Requirements:
 - 1. Division 01 Section "Alternates" for procedural requirements of incorporation of work scope costs.
 - 2. Division 01 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.

1.3 DEFINITIONS

A. 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 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
 - 1. Coordinate 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. Submittal schedule.
 - c. Items required to be indicated as separate activities in Contractor's construction schedule.
 - 2. Submit the schedule of values to Architect at earliest possible date, but no later than 7 days before the date scheduled for submittal of initial Applications for Payment.
- B. Format and Content: Use 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.
 - 1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Name of Architect.
 - c. Architect's project number.
 - d. Contractor's name and address.

- e. Date of submittal.
- 2. Arrange schedule of values consistent with format of AIA Document G703.
- 3. 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.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
 - 1) Labor.
 - 2) Materials.
 - 3) Equipment.
- 4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
 - a. amount totaling five percent of the Contract Sum and subcontract amount.
- 5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
- 6. 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.
 - a. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.
- 7. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
- 8. 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.
 - a. 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.
- 9. 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.

1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
 - 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
- C. Payment Application Times: Submit Application for Payment to Architect by the 15th of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.

- 1. Submit draft copy of Application for Payment seven days prior to due date for review by Architect.
- D. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.
- E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
 - 1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 - 2. Include amounts for work completed following previous Application for Payment, whether payment has been received. Include only amounts for work completed at time of Application for Payment.
 - 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
 - 4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
- F. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
 - 1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
 - 2. Provide supporting documentation that verifies the amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 - 3. Provide summary documentation for stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
- G. Transmittal: Submit four signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments.
 - 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- H. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
 - 1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 - 2. When an application shows completion of an item, submit conditional final or full waivers.
 - 3. The owner reserves the right to designate which entities involved in the Work must submit waivers.
 - 4. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

- I. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
 - 1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 - 2. When an application shows completion of an item, submit conditional final or full waivers.
 - 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 - 4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 - 5. Waiver Forms: Submit executed waivers of lien on forms, acceptable to Owner.
- J. 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.
 - 3. Contractor's construction schedule (preliminary if not final).
 - 4. Products list (preliminary if not final).
 - 5. Submittal schedule (preliminary if not final).
 - 6. List of Contractor's staff assignments.
 - 7. List of Contractor's principal consultants.
 - 8. Copies of building permits.
 - 9. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 - 10. Initial progress report.
 - 11. Report of preconstruction conference.
 - 12. Certificates of insurance and insurance policies.
 - 13. Performance and payment bonds.
 - 14. Data needed to acquire Owner's insurance.
- K. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
 - 1. Include documentation supporting the claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 - 2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- L. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
 - 1. Evidence of completion of Project closeout requirements.
 - 2. Insurance certificates for products and completed operations, where required and proof that taxes, fees, and similar obligations were paid.
 - 3. Updated final statement, accounting for final changes to the Contract Sum.
 - 4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 - 5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 - 6. AIA Document G707, "Consent of Surety to Final Payment."
 - 7. Evidence that claims have been settled.
 - 8. Final liquidated damages settlement statement.
 - 9. Building code required contractor certification.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 29 00

SECTION 01 31 00 - 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 coordination procedures.
 - 2. Coordination drawings.
 - 3. Requests for Information (RFIs).
 - 4. Project Web site.
 - 5. Project meetings.

B. Related Requirements:

- 1. Division 01 Section "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
- 2. Division 01 Section "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

A. RFI: Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work. Use the following information in tabular form:
 - Name, address, and telephone number of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.
- B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, 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 e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
 - 1. Submit copies of the list to the Owner and Architect. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

- 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. 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.
 - 1. Salvage materials and equipment involved in the performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

1.6 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings, at a scale not less than 1/4" = 1'-0", according to requirements in individual Sections, and additionally 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. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - c. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
 - d. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
 - e. Indicate required installation sequences.
 - f. 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 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 sub framing 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 / Electrical Rooms: Provide coordination drawings 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:
 - 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 inches (32 mm) in diameter and larger.
- b. Light fixture, exit light, emergency battery pack, smoke detector, and other firealarm 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:
 - Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.
- 9. U.L. fire-rated walls shall be indicated.
- 10. Review: Architect will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If the Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make changes as directed and resubmit.
- 11. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Division 01 Section "Submittal Procedures."

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 suggested resolution 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: Contractors standard AIA form or AIA Document G716, Software-generated form with substantially the same content as indicated above, acceptable to Architect.
 - 1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven 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 Contractor-generated RFIs will be returned without action:
 - Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Architect's actions on submittals.
 - g. 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 7 days of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly.

- 1. Project name.
- Name and address of Contractor.
- 3. Name and address of Architect
- 4. RFI number including RFIs that were returned without action or withdrawn.
- 5. RFI description.
- 6. Date the RFI was submitted.
- 7. Date Architect's response was received.
- F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify the Architect within 7 days if Contractor disagrees with response.
 - 1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

1.8 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
 - Attendees: Inform participants and others involved, and individuals whose presence is required, of the date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
 - 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 - 3. Minutes: Entity responsible for conducting meetings will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including the Owner and Architect, within 5 business days of the meeting.
- B. Preconstruction Conference: The Architect will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, 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, Owner's Commissioning Authority, 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 the 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.
 - b. Phasing.
 - 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.
 - I. Preparation of record documents.
 - m. Use of the premises and/or and existing building.
 - n. Work restrictions.

- o. Working hours.
- p. Owner's occupancy requirements.
- q. Responsibility for temporary facilities and controls.
- r. Procedures for moisture and mold control.
- s. Procedures for disruptions and shutdowns.
- t. Construction waste management and recycling.
- u. Parking availability.
- v. Office, work, and storage areas.
- w. Equipment deliveries and priorities.
- x. First aid.
- y. Security.
- z. Progress cleaning.
- Minutes: Entity responsible for conducting meeting 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 30 days prior to the scheduled date of Substantial Completion.
 - Conduct the conference to review requirements and responsibilities related to Project closeout.
 - 2. Attendees: Authorized representatives of Owner, Owner's Commissioning Authority, 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 the 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 the 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 delivery of material samples, attic stock, and spare parts.
 - f. Requirements for demonstration and training.
 - g. Preparation of Contractor's punch list.
 - h. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - i. Submittal procedures.
 - i. Coordination of separate contracts.
 - k. Owner's partial occupancy requirements.
 - I. Installation of Owner's furniture, fixtures, and equipment.
 - m. Responsibility for removing temporary facilities and controls.
 - 4. Minutes: Entity conducting meeting will record and distribute meeting minutes.
- D. Progress Meetings: Conduct progress meetings bi weekly and / or regular intervals.
 - 1. Coordinate dates of meetings with preparation of payment requests.
 - 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) Sequence of operations.
 - 2) Status of submittals.
 - 3) Off-site fabrication.
 - Access.
 - 5) Temporary facilities and controls.
 - 6) Progress cleaning.
 - 7) Quality and work standards.
 - 8) Status of correction of deficient items.
 - 9) Status of RFIs.
 - 10) Status of proposal requests.
 - 11) Pending changes.
 - 12) Status of Change Orders.
 - 13) Pending claims and disputes.
 - 14) Documentation of information for payment requests.
- 4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
 - 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.
- 5. 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 meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
- 6. 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) Sequence of operations.
 - 2) Status of submittals.
 - 3) Deliveries.
 - 4) Off-site fabrication.
 - 5) Access.
 - 6) Site utilization.
 - 7) Temporary facilities and controls.
 - 8) Work hours.
 - 9) Hazards and risks.
 - 10) Progress cleaning.
 - 11) Quality and work standards.
 - 12) Change Orders.
- 7. 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 31 00

SECTION 01 33 00 - 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 Requirements:

- 1. Division 01 Section "Payment Procedures" for submitting Applications for Payment and the schedule of values.
- 2. Division 01 Section "Closeout Procedures" for submitting warranties.
- 3. Division 01 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
- 4. Division 02 through 49 Sections for specific requirements for submittals in those Sections.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's and Construction Manager'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 action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. 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 revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.
 - Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.

- 2. Format: Arrange the following information in a tabular format:
 - 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.
 - f. Scheduled date for Architect's final release or approval.
 - g. Scheduled date of fabrication.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Architect's Digital Data Files: Electronic digital data files of the Contract Drawings will not be provided by Architect for Contractor's use in preparing submittals.
- 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. 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. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
 - 1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form 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. Transmittal Form for Electronic Submittals: Use software acceptable to Owner and Architect, containing the following information:
 - 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. Names of subcontractors, manufacturer, and supplier.
 - h. Category and type of submittal.
 - i. Submittal purpose and description.
 - i. Specification Section number and title.
 - k. Specification paragraph number or drawing designation and generic name for each of multiple items.
 - I. Drawing number and detail references, as appropriate.
 - m. Location(s) where product is to be installed, as appropriate.
 - n. Related physical samples submitted directly.
 - o. Indication of full or partial submittal.
 - p. Transmittal number.
 - q. Submittal and transmittal distribution record.
 - r. Other necessary identification.
 - s. Remarks.
- Metadata: Include the following information as keywords in the electronic submittal file metadata:
 - a. Project name.
 - b. Number and title of appropriate Specification Section.
 - c. Manufacturer name.
 - d. Product name.
- E. Options: Identify options requiring selection by Architect.
- F. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include the same identification information as related submittal.
- G. 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 review stamp.
- H. 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.
- I. Use for Construction: Retain complete copies of submittals on Project site. Use only final submittals that are marked with reviewed notation from Architect.

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.
 - Submit electronic submittals via email as PDF electronic files.
 - a. The Architect will annotate and retain one copy of file as an electronic Project record document file.
 - 2. Action Submittals: Architect will return reviewed copy.
 - 3. Informational Submittals: Architect will not return copies.
 - 4. Certificates and Certifications Submittals: Provide a statement that includes the 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.
 - b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
- 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 is 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.
 - h. Availability and delivery time information.
 - 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.
- 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.
 - 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 8.5" x 11" or no larger than 30" x 42".
 - 3. Submit Shop Drawings in the following format:
 - a. PDF electronic file.
 - b. Refer to Division 01 Section "Project Management and Coordination" for requirements for coordination drawings.
- 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.
 - e. Specification paragraph number and generic name of each item.
 - 3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.

- a. Submit at least one physical sample of colors and finishes. Architect will retain the physical copy.
- 4. 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 the final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
 - 1. Type of product. Include a unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
 - 2. Manufacturer and product name, and model number if applicable.
 - 3. Number and name of room or space.
 - 4. Location within room or space.
 - 5. Submit product schedule in the following format:
 - a. PDF electronic file.
- F. Application for Payment and Schedule of Values: Comply with requirements specified in Division 01 Section "Payment Procedures."
- G. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."
- H. Maintenance Data: Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."
- I. 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.
- J. 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.
- K. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- L. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- M. 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.

- N. Product Test Reports: Submit written reports indicating that 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.
- O. 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.
- P. 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.
- Q. 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.

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: See 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. Action Submittals: The Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. The Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate that submittal was reviewed or further action is required by the Contractor.

- B. Informational Submittals: The Architect will review each submittal and will not return it or will return it if it does not comply with requirements. The Architect will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received a prior review from the Architect.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Submittals not required by the Contract Documents may be returned by the Architect without action.

END OF SECTION 01 33 00

SECTION 01 71 00 - CLEANING

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Execute cleaning, during progress of the work, and at completion of the work, as required by General Conditions.

1.2 RELATED REQUIREMENTS

- A. Conditions of the contract.
- B. Each Specification Section: Cleaning for specific products or work.

1.3 DISPOSAL REQUIREMENTS

A. Conduct cleaning and disposal operations to comply with all local codes, ordinances, regulations and anti-pollution laws.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Use only those cleaning materials which will not create hazards to health or property, and which will not damage surfaces.
- B. Use only those cleaning materials and methods recommended by the manufacturer of the surface material to be cleaned.
- C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

3.1 DURING CONSTRUCTION

- A. Execute periodic cleaning, not less than weekly, to keep the work, the site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris resulting from construction operations.
- B. Provide on-site containers for the collection of waste materials, debris and rubbish per Section 01 50 00.
- C. Remove waste materials, debris and rubbish from the site periodically, and dispose of at legal disposal areas away from the site.

D. Contractor shall provide regular weekly cleaning of any library restroom used by construction staff. Review and coordinate cleaning schedule day and time with library staff. Clean all plumbing fixtures, compartment stall surfaces, floors, bathroom accessory surfaces and door handles.

3.2 DUST CONTROL

A. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly coated surfaces.

3.3 PROGRESSIVE CLEANING

A. Cleaning during construction is the responsibility of the Contractor. All areas shall be cleaned in a manner acceptable to Owner's Representative.

3.4 FINAL CLEANING

- A. Final cleaning before final inspection. Interior and exterior areas of the building effected by construction shall be cleared of all rubbish and thoroughly cleaned by the Contractor, including the following:
 - 1. All construction facilities, debris, and rubbish shall be removed from the Owner's property and legally disposed of.
 - 2. All finished surfaces effected by construction shall be swept, dusted, washed, waxed and polished. This includes cleaning of the work of all finished trades where needed, whether or not cleaning for such trades is included in their respective SECTIONS.

3.5 OTHER CLEANING

- A. Broom clean exterior paved surfaces, rake clean other surfaces of the grounds disturbed by construction.
- B. Prior to final completion or Owner occupancy, Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces, and all work areas, to verify that the entire work is clean.

END OF SECTION 01 71 00

SECTION 017300 - 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. Protection of installed construction.
 - 7. Correction of the Work.

B. Related Requirements:

- 1. Division 01 Section "Submittal Procedures" for submitting surveys.
- 2. Division 01 Section "Closeout Procedures" for submitting final Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

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 condition after installation of other work.

1.4 INFORMATIONAL SUBMITTALS

- Mechanical and Electrical Systems: 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 length of time permanent services
 and systems will be disrupted.
 - Include description of provisions for temporary services and systems during interruption of permanent services and systems.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. 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. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- B. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 - 1. Description of the Work.
 - 2. List of detrimental conditions, including substrates.
 - 3. List of unacceptable installation tolerances.
 - Recommended corrections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- B. 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 Contractor, submit a request for information to Architect.

3.3 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.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at 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. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- G. 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.
- H. 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. 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.
- I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.4 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.
 - 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. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- 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. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Division 01 Section "Summary."
- E. Existing Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.
- F. 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. Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 - 5. Proceed with patching after construction operations requiring cutting are complete.
- G. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
 - 3. Floors and Walls: Where walls or partitions that are removed 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 in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 - 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an evenplane surface of uniform appearance.

H. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.5 OWNER-INSTALLED PRODUCTS

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

3.6 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
 - Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 - 2. Do not hold waste materials for 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. Use containers intended for holding waste materials of type to be stored.
 - 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- 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 "Temporary Facilities and Controls." And Division 01 Section "Construction Waste Management and Disposal.
- H. During handling and installation, clean and protect construction that is 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.

3.7 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 them 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 safety. Replace damaged and malfunctioning controls and equipment.
- E. Manufacturer's Field Service: Comply with qualification requirements in Division 01 Section "Quality Requirements."

3.8 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.

END OF SECTION 017300

SECTION 01 74 20 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

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 the following:
 - 1. Salvaging nonhazardous demolition and construction waste.
 - 2. Disposing of nonhazardous demolition and construction waste.

1.3 DEFINITIONS

- A. Construction Waste: Building and improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Salvage: Recovery of demolition items to be returned to owner.
- E. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Achieve end-of-Project rates for salvage/recycling of [50] [75] <Insert number> percent by weight of total non-hazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials[.][, including the following:]
 - 1. Demolition Waste (which may include the following when within the project scope):
 - a. Gypsum board.
 - b. Acoustical ceiling grid
 - c. Carpet.
 - d. Carpet pad.
 - e. Sprinklers.
 - f. Mechanical equipment.
 - g. Refrigerants.

- h. Electrical conduit.
- i. Copper wiring.
- j. Lighting fixtures.
- k. Lamps.
- Electrical devices.
- 2. Construction Waste (which may include the following when within the project scope):
 - Wood trim.
 - b. Gypsum board.
 - c. Packaging: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
 - 1) Paper.
 - 2) Cardboard.
 - 3) Boxes.
 - 4) Plastic sheet and film.
 - 5) Polystyrene packaging.
 - 6) Wood crates.
 - 7) Plastic pails.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For waste management coordinator and refrigerant recovery technician.
- B. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.6 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- B. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
 - 1. Comply with operation, termination, and removal requirements in Division 01 Section "Temporary Facilities and Controls."

3.2 SALVAGING DEMOLITION WASTE

- A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:
 - 1. Clean salvaged items.
 - 2. Pack items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
 - 3. Store items in a secure area until installation.
 - 4. Protect items from damage during transport and storage.
 - 5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, support, and miscellaneous materials necessary to make items functional for use indicated.
- B. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:
 - 1. Clean salvaged items.
 - 2. Pack items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
 - 3. Store items in a secure area until delivery to Owner.
 - 4. Transport items to Owner's storage area on-site designated by Owner.
 - 5. Protect items from damage during transport and storage.

3.3 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall be shared equally by Owner and Contractor.
- C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.
- D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.
 - Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include a list of acceptable and unacceptable materials at each container and bin.
 - a. Inspect containers and bins for contamination and remove contaminated materials if found.
 - 2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
 - 4. Store components off the ground and protect from the weather.
 - 5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor.

3.4 RECYCLING DEMOLITION WASTE

- A. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.
- B. Metal Suspension System: Separate metal members including trim, and other metals from acoustical panels and tile and sort with other metals.
- C. Carpet and Pad: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.
 - 1. Store clean, dry carpet and pad in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.
- D. Carpet Tile: Remove debris, trash, and adhesive.
 - 1. Stack tile on pallet and store clean, dry carpet in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.
- E. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.
- F. Conduit: Reduce conduit to straight lengths and store by type and size.

3.5 RECYCLING CONSTRUCTION WASTE

A. Packaging:

- Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
- 2. Polystyrene Packaging: Separate and bag materials.
- 3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
- 4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:

- 1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
- 2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.
 - a. Comply with requirements in Division 32 Section "Plants." for use of clean sawdust as organic mulch.
- C. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.
 - 1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.
 - a. Comply with requirements in Division 32 Section "Plants." for use of clean ground gypsum board as inorganic soil amendment.

3.6 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
 - 1. Except as otherwise specified, do not allow waste materials that are to be disposed of 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 waste materials.
- C. Burning: Burning of waste materials is permitted only at designated areas on Owner's property, provided required permits are obtained. Provide full-time monitoring for burning materials until fires are extinguished.
- D. Disposal: Remove waste materials from Owner's property and legally dispose of them.

END OF SECTION 01 74 19

SECTION 01 77 00 - 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.
 - 5. Repair of the Work.

B. Related Requirements:

- Division 01 Section "Execution" for progress cleaning of Project site.
- 2. Division 01 Section "Operation and Maintenance" 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 "Cleaning"
- 5. Divisions 02 through 33 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 ACTION SUBMITTALS

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

SECTION 01 77 00

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
 - 3. Submit closeout submittals specified in individual Divisions 02 through 33 Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Submit maintenance material submittals specified in individual Divisions 02 through 33 Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number where applicable.
 - a. Schedule of Predictive and Preventative Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Owner's signature for receipt of submittals.
 - 5. Submit test/adjust/balance records.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Advise Owner of pending insurance changeover requirements.
 - 2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 - 3. Complete startup and testing of systems and equipment.
 - 4. Perform preventive maintenance on equipment used prior to Substantial Completion.
 - 5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings for new equipment.
 - 6. Complete final cleaning requirements, including touchup painting.
 - 7. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
 - 8. Provide the Contractor's comprehensive list of incomplete work items prior to requesting the Architect to perform any inspection for determination of Substantial Completion.
 - a) Note that if no reasonable list of incomplete work items remaining is provided by the Contractor that will be considered an admission by the Contractor that the Contractor is not ready for a Substantial Inspection determination by the Architect. As such, no inspection will occur by the Architect.
 - b) The Contractor is thus responsible for any failure to meet the Contractor's commitments of construction schedule to the Owner.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion with a reasonable work remaining list a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, the 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.

1.7 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: 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."
 - Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. A certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 - 3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, the Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. The 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.

1.8 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. Use CSI Form 14.1A.
 - Organize list of spaces in sequential order, starting with the ground floor 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:

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: 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, or when delay in submittal of warranties might limit Owner's rights under warranty.

- 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 Project Manual.
 - Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- D. Provide additional copies of each warranty to include in the operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by the 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.

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 the 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 designated 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. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - d. Clean exposed exterior and interior hard-surface finishes to a dirt-free condition, free of stains, films, and similar foreign substances.

- e. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
- f. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
- g. Remove labels that are not permanent.
- h. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
- i. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
- j. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
- k. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
- I. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
- m. Leave Project clean and ready for occupancy.
- C. Construction Waste Disposal: Comply with waste disposal requirements in Division 01 Section "Temporary Facilities and Controls." Division 01 Section "Construction Waste Management and Disposal."

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to original condition.
 - 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
 - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
 - 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
 - 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 01 77 00

SECTION 01 78 20 - OPERATION AND MAINTENANCE DATA

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 preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory.
 - 2. Emergency manuals.
 - 3. Operation manuals for systems, subsystems, and equipment.
 - 4. Product maintenance manuals.
 - 5. Systems and equipment maintenance manuals.

B. Related Requirements:

- 1. Division 01 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
- 2. Divisions 02 through 33 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.3 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

- A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operations and maintenance manuals in the following format:
 - 1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect.

- a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
- b. Enabled inserted reviewer comments on draft submittals.
- 2. Three paper copies. Include a complete operation and maintenance directory. Enclosed title pages and directories in clear plastic sleeves. Architect, through Construction Manager, will return two copies.
- C. Initial Manual Submittal: Submit a draft copy of each manual at least 30 days before commencing demonstration and training.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training.
 - 1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

- A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information. Include a section in the directory for each of the following:
 - 1. List of documents.
 - 2. List of systems.
 - 3. List of equipment.
 - 4. Table of contents.
- B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
- C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
- D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

- 1. Title page.
- 2. Table of contents.
- 3. Manual contents.
- B. Title Page: Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of Project.
 - 3. Name and address of Owner.
 - 4. Date of submittal.
 - 5. Name and contact information for Contractor.
 - 6. Name and contact information for Architect.
 - 7. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
 - 8. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
 - If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
 - 1. Electronic Files: Use electronic files prepared by the manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 - 2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

2.3 EMERGENCY MANUALS

- A. Content: Organize manual into a separate section for each of the following:
 - 1. Type of emergency.
 - 2. Emergency instructions.
 - Emergency procedures.
- B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
 - 1. Fire.

- 2. Flood.
- Gas leak.
- Water leak.
- 5. Power failure.
- 6. Water outage.
- 7. System, subsystem, or equipment failure.
- 8. Chemical release or spill.
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- D. Emergency Procedures: Include the following, as applicable:
 - 1. Instructions on stopping.
 - 2. Shutdown instructions for each type of emergency.
 - 3. Operating instructions for conditions outside normal operating limits.
 - 4. Required sequences for electric or electronic systems.
 - 5. Special operating instructions and procedures.

2.4 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
 - 1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 - 2. Performance and design criteria if Contractor have delegated design responsibility.
 - 3. Operating standards.
 - 4. Operating procedures.
 - 5. Operating logs.
 - 6. Wiring diagrams.
 - 7. Control diagrams.
 - 8. Piped system diagrams.
 - 9. Precautions against improper use.
 - 10. License requirements include inspection and renewal dates.
- B. Descriptions: Include the following:
 - Product name and model number. Use designations for products indicated on Contract Documents.
 - 2. Manufacturer's name.
 - 3. Equipment identification with serial number of each component.
 - 4. Equipment function.
 - 5. Operating characteristics.
 - 6. Limiting conditions.
 - 7. Performance curves.
 - 8. Engineering data and tests.
 - 9. Complete nomenclature and number of replacement parts.
- C. Operating Procedures: Include the following, as applicable:
 - 1. Startup procedures.
 - 2. Equipment or system break-in procedures.

- 3. Routine and normal operating instructions.
- 4. Regulation and control procedures.
- 5. Instructions on stopping.
- 6. Normal shutdown instructions.
- 7. Seasonal and weekend operating instructions.
- 8. Required sequences for electric or electronic systems.
- 9. Special operating instructions and procedures.
- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed and identify color-coding where required for identification.

2.5 PRODUCT MAINTENANCE MANUALS

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Product Information: Include the following, as applicable:
 - 1. Product name and model number.
 - 2. Manufacturer's name.
 - 3. Color, pattern, and texture.
 - 4. Material and chemical composition.
 - 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
 - 1. Inspection procedures.
 - 2. Types of cleaning agents to be used and methods of cleaning.
 - 3. List of cleaning agents and methods of cleaning detrimental to product.
 - 4. Schedule for routine cleaning and maintenance.
 - 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
 - 1. Standard maintenance instructions and bulletins.
 - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 - 3. Identification and nomenclature of parts and components.
 - 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
 - 1. Test and inspection instructions.
 - 2. Troubleshooting guide.
 - 3. Precautions against improper maintenance.
 - 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - 5. Aligning, adjusting, and checking instructions.
 - 6. Demonstration and training video recording, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
 - 1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 - 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.
- B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
 - 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 - 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 - 1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
 - 1. Do not use original project record documents as part of operation and maintenance manuals.
- G. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 01 78 20

SECTION 04 50 00 - MASONRY RESTORATION

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 DESCRIPTION OF WORK

- A. Work included: provide labor, materials and equipment necessary to complete the following work of this section, including but not limited to the following:
 - 1. Patching with specified repair spalls or losses in locations indicated on contract drawings.
 - 2. Cleaning of efflorescence from sandstone masonry.
 - 3. Anchorage replacement at exterior railings.

1.3 REFERENCE STANDARDS

ASTM CI 19: Definitions of Terms Relating to Natural Building Stones.

ASTM C150: Portland Cement D.

ASTM C144: Aggregate for Masonry Mortar.

ASTM C170: Compressive Strength

1.4 SEQUENCING / SCHEDULING STONEWORK

- A. Perform Sandstone masonry restoration work in the following sequence:
 - 1 Wash the stone surface of dirt & debris, algae, laitance and loose material.
 - 2 Remove failed anchorage components, epoxy patch material, pins, loose or old mortar Material.
 - 3 New repair products to match existing in color and texture of the remaining stonework
 - 3 Seal existing stonework.
- B. Perform Concrete masonry restoration work in the following sequence:
 - 1. Wash the surface of dirt, debris, algae and laitance.
 - 2. Chip out any loose material.
 - 3. Apply Mortar repair material. Flatten and shape to fit area.
 - 4. Apply polyurethane traffic coating. Architect to select color.
 - 5. Broadcast area with sand.

1.5 SUBMITTALS

- 1. Manufacturer's product data and MSDS sheet.
 - 2. Provide color samples of repair or replacement materials for verification

1.6 DEFINITIONS

B. Existing to Remain: Existing items that are not to be removed or dismantled.

- C. Match: To blend with adjacent construction and manifest no apparent difference in material type, species, cut, form, detail, color, grain, texture, or finish; as approved by Architect.
- D. Reinstall: To protect removed or dismantled item, repair and clean it as indicated for reuse, and reinstall it in original position, or where indicated.
- E. Remove: Specifically for historic spaces, and surfaces, the term means to detach an item from existing construction to the limits indicated, using hand tools and hand-operated power equipment, and legally dispose of it off-site, unless indicated to be salvaged or reinstalled.
- F. Repair: To correct damage and defects, retain existing materials, features, and finishes while employing as little new material as possible. Includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials.
- G. Replace: To remove, duplicate, and reinstall the entire item with new material. The original item is the pattern for creating duplicates unless otherwise indicated.
- H. Retain: To keep existing items that are not to be removed or dismantled.
- I. Salvage: To protect removed or dismantled items and deliver them to the owner.

1.7 QUALITY ASSURANCE

- A. Historic Treatment Qualifications: An experienced firm regularly engaged in historic treatments similar in nature, materials, design, and extent to this work as specified in each section, and that has completed a minimum of five recent projects with a record of successful in-service performance that demonstrate the firm's qualifications to perform this work.
 - 1. Worker Qualification: Persons who are experienced in historic treatment work of types they will be performing.
 - 2. Dust and Noise Control: Include locations of proposed temporary dust- and noise-control partitions and means of egress from occupied areas coordinated with continuing on-site operations and other known work in progress.

1.8 STORAGE AND PROTECTION OF HISTORIC MATERIALS

- A. Historic Materials:
 - 1. Repair and clean historic items as indicated and return them to a functional condition for use
- B. Existing Historic Materials to Remain: Protect construction indicated to remain against damage, overspray, and soiling from construction work.

1.4 1.9 WARRANTY

A. Warranty: Provide manufacturer's standard warranty for each type of product. Include written testing documentation and test reports if requested by Architect.

PART 2 - PRODUCTS

2.1 MATERIALS

- 1. Epoxy Adhesive for Setting Pins and Stone to Stone Contact (basis of design):
 - a. Bonstone Clear Gel Structural Epoxy by Bonstone Materials.
- b. Water for Cleaning and Mixing with Mortars: Potable water. If not potable filter through an Aquapure (or equal) filtration system to remove iron and particulates. The water shall be filtered with a 5-micron particulate filter placed in line with the water supply. All hoses, fittings, pumps shall be made from non-ferrous alloy parts.
- 2. Sandstone Cleaning & Sealing (basis of design): Apply cleaner at a concentration determined by test to an inconspicuous area to verify use directly to the surface. Cleaner is for masonry subject to vanadium, manganese and other metallic stains.
 - a. Prosoco Inc, Vana Trol, new and existing masonry cleaner
 - b. Prosoco Inc, Sure Klean Weather Seal Siloxane PD Water Repellent
- 3. Concrete Repair (basis of design):
- a. Sikalastic 720 One Shot by Šika Corporation
- b. SikaQuick 1000 by Sika Corporation

PART 3 - EXECUTION

3.1 PROTECTION

- A. Comply with temporary barrier requirements in Division 01 Section "Temporary Facilities and Controls."
- B. Ensure that supervisory personnel are on-site and on duty when historic treatment work begins and during its progress.
- C. Protect people, motor vehicles, surrounding surfaces of the building, building site, plants, and surrounding buildings from harm resulting from historic treatment procedures.
 - 1. Use only proven protection methods, appropriate to each area and surface being protected.
 - 2. Provide barricades, barriers, and temporary directional signage to exclude the public from areas where historic treatment work is being performed.
 - 3. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during course of historic treatment work.
 - 4. Contain dust and debris generated by removal and dismantling work and prevent it from reaching the public or adjacent surfaces.
- D. Temporary Protection of Historic Materials:
 - 1. Protect existing historic materials with temporary protection and construction. Do not deface or remove existing materials.

- 2. Do not attach temporary protection to historic surfaces except as indicated as part of the historic treatment program and approved by Architect.
- E. Comply with each product manufacturer's written instructions for protection and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.
- F. Cover adjacent surfaces with protective materials that are proven to resist chemicals selected for Project unless chemicals being used will not damage adjacent surfaces as indicated in historic treatment program. Use covering materials and masking agents that are waterproof, UV resistant, and will not stain or leave residue on surfaces to which they are applied. Apply protective materials according to manufacturer's written instructions. Do not apply liquid masking agents or adhesives to painted or porous surfaces. When no longer needed, promptly remove protective materials staining.
- G. Do not apply chemicals during winds of sufficient force to spread them to unprotected surfaces.

3.2 PROTECTION FROM FIRE

- 1. Remove and keep the area free of combustibles including rubbish, paper, waste, and chemicals, except to the degree necessary for the immediate work.
- 2. Prohibit smoking by all people within Project work and staging areas.

3.3 MISCELANEOUS REPAIR

- A. General: Have removal and repair work performed by an individual experienced in historic and masonry restoration.
- B. Anchorages:
 - 1. Remove anchorages associated with items to be repaired.
 - 2. In historic surfaces, patch or repair the holes created by anchorage removal to the historic surface being patched as indicated on the drawings.
 - 3. Reinstall components with 304 stainless steel anchorages and secure to the existing surface.

END OF SECTION 04 50 00

SECTION 06 10 00 - ROUGH CARPENTRY

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. Materials and installation requirements for other work, commonly assigned to carpentry trade, are specified in other sections of these specifications.
- B. The types of carpentry work specified in this section include (but are not necessarily limited to) the following:
 - 1. Wood furring.
 - 2. Wood nailers and blocking.
 - 3. Miscellaneous wood framing.
 - 4. Plywood backing panels.

1.3 RELATED WORK UNDER OTHER SECTIONS

- 1. Division 06 Section Rough Carpentry and Miscellaneous Rough Carpentry for plywood backing panels.
- 2. Division 07 Section "Sound Attenuation Insulation"
- 3. Division 09 Sections "Gypsum Board"
- 4. Division 26, 27, and 28 Sections for Electrical, Communications, and/or Security wall mounted equipment.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering it with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
 - 1. Factory mark each piece of lumber with grade stamp of grading agency.

- 2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
- 3. Provide dressed lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: 15 percent unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with the ground.
 - Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
 - 1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece or omit marking and provide certificates of treatment compliance issued by inspection agency.
- D. Application: Treat items indicated on Drawings, and the following:
 - 1. Wood sills, sleepers, blocking, furring, and similar concealed members in contact with masonry or concrete.

2.3 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 - 1. Provide wood for support or attachment of other work such as, nailers, blocking, furring, grounds, stripping and similar members. Provide lumber of sizes shown or specified, worked to shapes shown, and as follows:
 - a. Moisture Content: 15% maximum for lumber items not specified to receive wood preservative treatment.
 - 2. Grade: Construction Grade light framing size lumber of any species, or board size lumber, as required. Provide Construction Grade boards (RIS or WCLIB) or No. 2 boards (SPIB or WWPA).
- B. For items of dimension lumber size, provide Construction, or No. 2 grade lumber and any of the following species with moisture content not exceeding 15%:
 - 1. Hem-fir (north); NLGA.
 - 2. Mixed southern pine: SPIB.
 - 3. Spruce-pine-fir; NLGA.
 - 4. Hem-fir; WCLIB or WWPA.
 - 5. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
 - 6. Western woods; WCLIB or WWPA.
 - 7. Northern species; NLGA.
 - 8. Eastern softwoods; NeLMA.

- C. For concealed boards, provide lumber with 15 percent maximum moisture content and any of the following species and grades:
 - 1. Mixed southern pine; No. 2 grade; SPIB.
 - Hem-fir or hem-fir (north); Construction or No. 2 Common grade; NLGA, WCLIB, or WWPA.
 - 3. Spruce-pine-fir (south) or spruce-pine-fir; Construction or No. 2 Common grade; NeLMA, NLGA, WCLIB, or WWPA.
 - 4. Eastern softwoods; No. 2 Common grade; NeLMA.
 - 5. Northern species; No. 2 Common grade; NLGA.
 - 6. Western woods; Construction or No. 2 Common grade; WCLIB or WWPA.
- D. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- E. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
- F. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.4 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
 - Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
- B. Power-Driven Fasteners: NES NER-272.
- C. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.
- D. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry assemblies and equal to four times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
 - 1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
 - 2. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2 (ASTM F 738M and ASTM F 836M, Grade A1 or A4).
- E. Wood Screws: ASME B18.6.1
- F. Screws for securing wood to metal stud framing: Self tapping: Teks #12 2-3/4 in. Phillips Flat-Head Self-Drilling Screws manufactured by ITW Buildex and Illinois Tool Works, Inc; Phillips II Plus Wood to Metal Screws manufactured by Phillips Fasteners, Fastenal or other similar products specifically recommended for use securing wood to metal stud framing.
- G. Screws specifically designed for securing through metal to wood blocking #10-24x 1-7/16-inch self-drilling flat head as manufactured by Fastenal; ITW Buildex and Illinois Tool Works; Phillips

Fasteners, or other manufacturer providing products specifically designed for securing blocking when first drilling through metal to engage the wood blocking.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- B. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. Metal Framing Anchors: Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.
- D. Install sill sealer gasket to form continuous seal between sill plates and foundation walls.
- E. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
 - 1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.
- F. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:
 - 1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches (2438 mm) o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
 - 2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches (2438 mm) o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal- (38-mm actual-) thickness.
 - 3. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq. ft. (9.3 sq. m) and to solidly fill space below partitions.
 - 4. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet (6 m) o.c.
- G. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
 - 1. Use inorganic boron for items that are continuously protected from liquid water.
 - 2. Use copper naphthenate for items not continuously protected from liquid water.
- H. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. NES NER-272 for power-driven fasteners.
 - 2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.

- 3. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.
- 4. Wood Screws: ASME B18.6.1
- I. Adhesives for Gluing Furring and Sleepers to Concrete or Masonry: Formulation complying with ASTM D 3498 that is approved for use indicated by adhesive manufacturer.
 - 1. Adhesives shall have a VOC content of 70 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- J. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.
- K. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.
 - Comply with approved and/or indicated fastener patterns where applicable. Before fastening, mark fastener locations, using a template made of sheet metal, plastic, or cardboard.
 - 2. Use finishing nails unless otherwise indicated. Countersink nail heads and fill holes with wood filler.
 - 3. Use common nails unless otherwise indicated. Drive nails snug but do not countersink nail heads.

3.2 WOOD GROUND, SLEEPER, BLOCKING, AND NAILER INSTALLATION

- A. Install where indicated and where required for screeding or attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.
- C. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- D. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches (38 mm) wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.3 WOOD FURRING INSTALLATION

- A. Install plumb and level with closure strips at edges and openings. Shim with wood as required.
 - 1. Firestop furred spaces on walls at each floor level, with wood blocking or incombustible materials, accurately fitted to close furred spaces. Comply with governing regulations.
- B. Furring to Receive Gypsum Drywall: Unless otherwise shown, provide 1" x 3" furring at 24" o/c. spacing, in the direction required for support of drywall; refer to Division 09.
- C. Tolerance: Shim and level wood furring to a tolerance of 1/8" in 10'-0", except 1/4" in 10'-0" at thick coat plaster work.

3.4 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

- B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet or sufficiently wet that moisture content exceeds that specified, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- C. Where wood preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

END OF SECTION 06 10 00

SECTION 064020 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 **RELATED DOCUMENTS**

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

1.2 **SUMMARY**

- Α. This Section includes the following:
 - 1. Interior standing and running trim.
 - 2. Wood cabinets.
 - 3. Solid-surfacing-material countertops.
 - Shop finishing interior woodwork. 4.
- B. Related Sections include the following:
 - 1. Division 06 Section "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing woodwork and concealed within other construction before woodwork installation.

1.3 **DEFINITIONS**

Α. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items unless concealed within other construction before woodwork installation.

1.4 **ACTION SUBMITTALS**

- A. Product Data: For each type of product indicated, including cabinet hardware and accessories.
- B. Product Data: For solid-surfacing material, cabinet hardware and accessories.
 - 1. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.
- C. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
 - 1. Show details full size.
 - Show locations and sizes of furring, blocking, and hanging strips, including concealed 2. blocking and reinforcement specified in other Sections.
 - 3. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets and other items installed in architectural woodwork.
 - 4. Show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.

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- 5. Apply WI-certified compliance label to first page of Shop Drawings.
- D. Samples for Initial Selection:
 - 1. Shop-applied transparent finishes.
 - 2. Shop-applied opaque finishes.
 - 3. Solid-surfacing materials.
 - 4. Interior standing and running trim.

E. Samples for Verification:

- 1. Lumber with or for transparent finish, not less than 5 inches (125 mm) wide by 24 inches (600 mm) longl, for each species and cut, finished on 1 side and 1 edge.
- Veneer leaves representative of and selected from flitches to be used for transparentfinished woodwork
- 3. Veneer-faced panel products with or for transparent finish, 8 by 10 inches (200 by 250 mm) for each species and cut. Include at least one face-veneer seam and finish as specified.
- 4. Lumber and panel products with shop-applied opaque finish 8 by 10 inches (200 by 250 mm) for panels, for each finish system and color, with 1/2 of exposed surface finished.
- 5. Thermoset decorative-panels, 8 by 10 inches (200 by 250 mm), for each type, color, pattern, and surface finish, with edge banding on 1 edge.
- 6. Solid-surfacing materials, 6 inches (150 mm) square.
- 7. Corner pieces as follows:
 - a. Cabinet-front frame joints between stiles and rails, as well as exposed end pieces, 18 inches (450 mm) high by 18 inches (450 mm) wide by 6 inches (150 mm) deep.
 - b. Miter joints for standing trim.
- 8. Exposed cabinet hardware and accessories.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and fabricator.
- B. Product Certificates: For each type of product, signed by product manufacturer.
- C. Woodwork Quality Standard Compliance Certificates: AWI Quality Certification Program certificates WI-certified compliance certificates.

1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful inservice performance. Shop is a certified participant in AWI's Quality Certification Program. Shop is a licensee of WI's Certified Compliance Program.
- B. Installer Qualifications: Fabricator of products, Certified participant in AWI's Quality Certification Program, Licensee of WI's Certified Compliance Program.
- C. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production of interior architectural woodwork with sequence-matched wood veneers and wood

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doors with face veneers that are sequence matched with woodwork and transparent-finished wood doors that are required to be of same species as woodwork.

- D. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.
 - 1. Provide AWI Quality Certification Program labels and certificates indicating that woodwork, including installation, complies with requirements of grades specified.
- E. Quality Standard: Unless otherwise indicated, comply with WI's "Manual of Millwork" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.
 - 1. Provide WI-certified compliance labels and] certificates indicating that woodwork, including installation, complies with requirements of grades specified.
 - 2. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with such selections and requirements in addition to the quality standard.
- F. Fire-Test-Response Characteristics: Where fire-retardant materials or products are indicated, provide materials and products with specified fire-test-response characteristics as determined by testing identical products per test method indicated by UL, ITS, or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify with appropriate markings of applicable testing and inspecting agency in the form of separable paper label or, where required by authorities having jurisdiction, imprint on surfaces of materials that will be concealed from view after installation.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements.

1.8 PROJECT CONDITIONS

- A. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed and indicate measurements on Shop Drawings.
 - 2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

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INTERIOR WOODWORK

1.9 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

B. Hardware Coordination: Distribute copies of approved hardware schedule specified in Division 08 Section "Door Hardware (Scheduled by Describing Products)" to fabricator of architectural woodwork; coordinate Shop Drawings and fabrication with hardware requirements.

PART 2 - PRODUCTS

2.1 WOODWORK FABRICATORS

- A. Available Fabricators: Subject to compliance with requirements, fabricators offering interior architectural woodwork that may be incorporated into the Work include, but are not limited to, the following:
- B. Fabricators: Subject to compliance with requirements, provide interior architectural woodwork by one of the following:

2.2 MATERIALS

- A. General: Provide materials that comply with requirements of AWI's, WI's quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.
- B. Wood Species and Cut for Transparent Finish: Match existing library furnishings. Submit for approval.
- C. Wood Species for Opaque Finish: Any closed-grain hardwood which matches existing.
- D. Wood Products: Comply with the following:

2.3 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this Article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified.
 - 1. Do not use treated materials that do not comply with requirements of referenced woodworking standard or that are warped, discolored, or otherwise defective.
 - 2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.
 - 3. Identify fire-retardant-treated materials with appropriate classification marking of UL, U.S. Testing, Timber Products Inspection, or another testing and inspecting agency acceptable to authorities having jurisdiction.
 - 4. Interior Type A: Low-hygroscopic formulation.
 - 5. Mill lumber after treatment within limits set for wood removal that do not affect listed firetest-response characteristics, using a woodworking plant certified by testing and inspecting agency.

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- 6. Mill lumber before treatment and implement special procedures during treatment and drying processes that prevent lumber from warping and developing discolorations from drying sticks or other causes, marring, and other defects affecting appearance of treated woodwork.
- 7. Kiln-dry materials before and after treatment to levels required for untreated materials.
- B. Fire-Retardant Fiberboard: Medium-density fiberboard panels complying with ANSI A208.2, made from softwood fibers, synthetic resins, and fire-retardant chemicals mixed together at time of panel manufacture to achieve flame-spread index of 25 or less and smoke-developed index of 200 or less per ASTM E 84.
 - 1. Product: Subject to compliance with requirements, provide "Medite FR" by SierraPine Ltd.: Medite Div.

2.4 CABINET HARDWARE AND ACCESSORIES

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets, except for items specified in Division 08 Section "Door Hardware (Scheduled by Describing Products)."
- B. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, 170 degrees of opening, self-closing.
- C. Back-Mounted Pulls: BHMA A156.9, B02011.
- D. Wire Pulls: Back mounted, solid metal ADA compliant wire pull, finish to be selected. Submit for approval.
- E. Catches: Magnetic catches, BHMA A156.9
- F. Adjustable Shelf Standards and Supports: BHMA A156.9, B04071; with shelf rests, B04081 BHMA A156.9, B04102; with shelf brackets, B04112.
- G. Shelf Rests: BHMA A156.9, B04013; metal, two-pin type with shelf hold-down clip.
- H. Drawer Slides: BHMA A156.9, B05091.
 - 1. Heavy Duty (Grade 1HD-100 and Grade 1HD-200): Side mounted; full-extension type; zinc-plated steel ball-bearing slides. Soft close.
- I. Aluminum Slides for Sliding Glass Doors: BHMA A156.9, B07063.
- J. Door Locks: BHMA A156.11, E07121 (all cabinet doors).
- K. Drawer Locks: BHMA A156.11, E07041 (all drawers).
- L. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.
 - 1. Dark, Oxidized, Satin Bronze, Oil Rubbed: BHMA 613 for bronze base; BHMA 640 for steel base; match Architect's sample.
 - 2. Bright Brass, Clear Coated: BHMA 605 for brass base; BHMA 632 for steel base.
 - 3. Satin Brass, Blackened, Bright Relieved, Clear Coated: BHMA 610 for brass base; BHMA 636 for steel base.
 - 4. Satin Chromium Plated: BHMA 626 for brass or bronze base; BHMA 652 for steel base.

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- 5. Bright Chromium Plated: BHMA 625 for brass or bronze base; BHMA 651 for steel base.
- 6. Satin Stainless Steel: BHMA 630.
- M. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.
- N. Cabinet door Swing Up Fittings with soft close and option to hold door in open position: A156.9

2.5 FABRICATION, GENERAL

- A. Interior Woodwork Grade: Unless otherwise indicated, provide Premium.
- B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.
- C. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.
- D. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
 - 1. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members and Rails: 1/16 inch (1.5 mm).
- E. Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

2.6 INTERIOR STANDING AND RUNNING TRIM FOR TRANSPARENT FINISH

- A. Grade: Premium
- B. Wood Species and Cut: Match species and cut indicated for other types of transparent-finished architectural woodwork located in same area of building, unless otherwise indicated.
- C. For trim items wider than available lumber, use veneered construction. Do not glue for width.
- D. For rails wider or thicker than available lumber, use veneered construction. Do not glue for width or thickness.
- E. Backout or groove backs of flat trim members and kerf backs of other wide, flat members, except for members with ends exposed in finished work.
- F. Assemble casings in plant except where limitations of access to place of installation require field assembly.
- G. Assemble moldings in plant to maximum extent possible. Miter corners in plant and prepare for field assembly with bolted fittings designed to pull connections together.

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2.7 INTERIOR STANDING AND RUNNING TRIM FOR OPAQUE FINISH

- A. Grade: Premium.
- B. Wood Species: hardwood to match existing.
- C. Backout or groove backs of flat trim members and kerf backs of other wide, flat members, except for members with ends exposed in finished work.
- D. Assemble casings in plant except where limitations of access to place of installation require field assembly.
- E. Assemble moldings in plant to maximum extent possible. Miter corners in plant and prepare for field assembly with bolted fittings designed to pull connections together.

2.8 WOOD CABINETS FOR TRANSPARENT FINISH

- A. Grade: Premium
- B. AWI Type of Cabinet Construction: Full overlay, as indicated.
- C. WI Construction Style: Style A, Frameless
- D. WI Construction Type: Type II, single-length sections to fit access openings.
- E. WI Door and Drawer Front Style: Full overlay.
- F. Wood Species and Cut for Exposed Surfaces: Match existing
 - 1. Grain Direction: Vertically for drawer fronts, doors, and fixed panels as indicated.
 - 2. Veneer Matching within Panel Face: Balance match.
- G. Semi-exposed Surfaces: Provide surface materials indicated below:
 - 1. Surfaces Other Than Drawer Bodies: Same species and cut indicated for exposed surfaces.

2.9 WOOD CABINETS FOR OPAQUE FINISH

- A. Grade: Premium
- B. AWI Type of Cabinet Construction: Full overlay as indicated.
- C. WI Construction Style: Style A, Frameless.
- D. WI Construction Type: Type II, single-length sections to fit access openings.
- E. WI Door and Drawer Front Style: Full overlay.
- F. Species for Exposed Lumber Surfaces: Any closed-grain hardwood.
- G. Panel Product for Exposed Surfaces: Medium-density **overlay**.

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H. Semi exposed Surfaces: Provide surface materials indicated below:

1. Surfaces Other Than Drawer Bodies: Match materials indicated for exposed surfaces

2.10 SOLID-SURFACING-MATERIAL COUNTERTOPS

A. Grade: Premium.

B. Solid-Surfacing-Material Thickness: 3/4 inch (19 mm).

C. Colors, Patterns, and Finishes: Provide materials and products that result in colors of solid-surfacing material complying with the following requirements:

1. As selected by Architect from manufacturer's full range selections.

D. Fabricate tops in one piece, unless otherwise indicated. Comply with solid-surfacing-material manufacturer's written recommendations for adhesives, sealers, fabrication, and finishing.

E. Countertop preparation for undermount sink.

F. Drill holes in countertops for plumbing fittings in shop.

2.11 SHOP FINISHING

A. Grade: Provide finishes of same grades as items to be finished.

B. General: Finish architectural woodwork at fabrication shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.

C. General: Shop finish transparent-finished interior architectural woodwork at fabrication shop as specified in this Section. Refer to Division 09 painting Sections for finishing opaque-finished architectural woodwork.

D. General: Drawings indicate items that are required to be shop finished. Finish such items at fabrication shop as specified in this Section. Refer to Division 09 painting Sections for finishing architectural woodwork not indicated to be shop finished.

E. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.

F. Transparent Finish:

1. Grade: Premium.

2. Sheen: to be selected.

G. Opaque Finish:

1. Grade: Premium.

2. Sheen: to be selected.

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PART 3 - EXECUTION

3.1 PREPARATION

- A. Before installation, condition woodwork to average prevailing humidity conditions in installation areas.
- B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

- A. Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 for fabrication of type of woodwork involved.
- B. Assemble woodwork and complete fabrication at Project site to comply with requirements for fabrication in Part 2, to extent that it was not completed in the shop.
- C. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).
- D. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- E. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails **or** finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.
- F. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces from maximum length of lumber available to greatest extent possible. Do not use pieces less than 36 inches (900 mm) long, except where shorter single-length pieces are necessary.
 - 1. Fill gaps, if any, between top of base and wall with plastic wood filler, sand smooth, and finish same as wood base if finished.
 - 2. Install wall railings on indicated metal brackets securely fastened to wall framing.
 - 3. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches (3 mm in 2400 mm).
- G. Cabinets: Install without distortion so doors and cabinet drawers' fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
 - 1. Install cabinets with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.
 - 2. Maintain veneer sequence matching of cabinets with transparent finish.
 - 3. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches (400 mm) O.C. with [No. 10 wafer-head screws sized for 1-inch (25-mm) penetration into wood framing, blocking, or hanging strips [No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish [toggle bolts through metal backing or metal framing behind wall finish].

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H. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.

- 1. Align adjacent solid-surfacing-material countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop. Carefully dress joints smoothly. Remove any surface scratches, and clean entire surface.
- 2. Install countertops with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.
- 3. Calk space between backsplash and wall with sealant specified in Division 07 Section "Joint Sealants."
- I. Touch up finishing work specified in this Section after installation of woodwork. Fill nail holes with matching filler where exposed.
- J. Refer to Division 09 Sections for final finishing of installed architectural woodwork not indicated to be shop finished.

3.3 ADJUSTING AND CLEANING

- A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean woodwork on exposed and semi exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 064020

SECTION 070150 - PREPARATION FOR RE-ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

- 1. Roof replacement preparation consists of a full roof tear-off of roof system and underlying insulation down to the structural deck at designated roof areas.
- 2. Removal of flashings at designated roof areas.
- 3. Removal and reinstallation of indicated components, accessories, and equipment.

B. Related Information:

- 1. Division 00 Document "Existing Condition Information" for related Project information not part of the Contract Documents.
- 2. Division 01 Section "Summary" for use of the premises and phasing requirements, and for restrictions on use of the premises due to Owner or tenant occupancy.
- 3. Division 01 Section "Temporary Facilities and Controls" for temporary construction and environmental protection measures.
- 4. Division 07 Section "Sheet Metal Flashing and Trim" for formed metal roof flashings and counter flashings.
- C. Alternates: Refer to Division 01 Section "Alternates" for description of Work in this Section affected by alternates.
- D. Allowances: Refer to Division 01 Section "Allowances" for description of Work in this Section affected by allowances.
- E. Unit Prices: Refer to Division 01 Section "Unit Prices" for description of Work in this Section affected by unit prices.

1.2 DESCRIPTION OF WORK

- A. Re-roofing preparation Work consists of the following:
 - 1. Preparation for Roof Area A:
 - a. Preparation for: Roof replacement.
 - b. Existing Roof Type: Adhered single ply (TPO).
 - c. Existing Deck Type: Lightweight insulating concrete over metal deck.
 - d. Roof tear-off.
 - e. Removal and reinstallation of indicated components, accessories, and equipment.

- f. Removal of base flashings.
- 2. Preparation for Roof Area B:
 - Existing surrounding sloped single-ply (TPO) membrane adhered to plywood on structural steel deck to remain.
 - b. Tie-in and flash into new TPO roof construction at Roof Area A per approved details.

1.3 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be reused, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

1.4 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D1079 "Standard Terminology Relating to Roofing and Waterproofing" and glossary in applicable edition of NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" for definition of terms related to roofing work in this Section.
- B. Existing Roofing System: Roofing system identified above, including roof covering/membrane, roof insulation, surfacing, and components and accessories between deck and roof covering/membrane.
- C. Full Roof Tear-Off: Removal of existing membrane roofing system from deck.
- D. Partial Roof Tear-Off: Removal of a portion of existing membrane roofing system from deck or removal of selected components and accessories from existing membrane roofing system.
- E. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.
- F. Existing to Remain: Existing items of construction that are not indicated to be removed.
- G. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- H. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- I. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- J. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.5 PREINSTALLATION MEETINGS

A. Preliminary Roofing Conference: Before starting removal Work, conduct conference at Project site.

- 1. Coordinate with roofing preinstallation meetings specified in Division 07 roofing section(s).
- 2. Review methods and procedures related to roofing tear-off, including, but not limited to, the following:
 - a. Reroofing preparation, including roofing system manufacturer's written instructions.
 - b. Temporary protection requirements for existing roofing system components that are to remain.
 - Existing roof drains and roof drainage during each stage of reroofing, and roofdrain plugging and plug removal.
 - d. Construction schedule and availability of materials, Installer's personnel, equipment, and facilities needed to avoid delays.
 - e. Existing roof deck conditions requiring Architect notification.
 - f. Existing roof deck removal procedures and Owner notifications.
 - g. Condition and acceptance of existing roof deck and base flashing substrate for reuse.
 - h. Structural loading limitations of roof deck during reroofing.
 - i. Base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that affect reroofing.
 - j. HVAC shutdown and sealing of air intakes.
 - k. Shutdown of fire-suppression, -protection, and -alarm and -detection systems.
 - I. Asbestos removal and discovery of asbestos-containing materials.
 - m. Governing regulations and requirements for insurance and certificates if applicable.

1.6 ACTION SUBMITTALS

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

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer for refrigerant recovery technician.
- B. Field Test Reports:
 - 1. Fastener pull-out test report.
- C. Digital Images or Videos: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, which might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.

- D. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.
- E. Schedule of Re-Roofing Preparation Activities: Indicate the following:
 - 1. Detailed sequence of re-roofing preparation work, with starting and ending dates for each activity. Ensure occupants' on-site operations are uninterrupted.
 - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Coordination of Owner's continuing occupancy of portions of existing building.
- F. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.8 CLOSEOUT SUBMITTALS

A. Certified statement from manufacturer of existing warranted roof system stating that existing roof warranty has not been affected by Work performed under this Section.

1.9 QUALITY ASSURANCE

- A. Installer Qualifications: Installer of new membrane roofing system.
- B. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

1.10 PROJECT / FIELD CONDITIONS

- A. Owner will occupy portions of building immediately below reroofing area.
 - 1. Conduct reroofing so Owner's operations will not be disrupted.
 - 2. Provide Owner with not less than 48 hours' written notice of activities that may affect Owner's operations.
 - 3. Coordinate work activities daily with Owner so Owner can place protective dust or water leakage covers over sensitive equipment or furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below the work area.
 - 4. Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below the affected area.
 - a. Verify that occupants below the work area have been evacuated before proceeding with work over the impaired deck area.
- B. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.

- C. Maintain access to existing walkways, and other adjacent occupied or used facilities.
- D. Limit construction loads on roof to rooftop equipment wheel loads and uniformly distributed loads not exceeding recommendations of Contractor's professional engineer based upon site inspection and analysis.
- E. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.
 - 1. Remove only as much roofing in one day as can be made watertight in the same day.
- F. Daily Protection: Coordinate installation of roofing so insulation and other components of roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.
- G. Hazardous Materials: It is not expected that hazardous materials such as asbestos-containing materials will be encountered in the Work.
 - 1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner.
 - a. Hazardous materials will be removed by Owner under a separate contract.
 - b. Obtain direction from Architect before proceeding with work in the affected area.

PART 2 - ROOF INSULATION PRODUCTS

2.1 TEMPORARY PROTECTION MATERIALS

- A. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, felt or glass-fiber facer on both major surfaces.
 - 1. ½" thick High-density Polyisocyanurate cover board as face top layer.
- B. Plywood: NIST DOC PS 1, Grade CD, Exposure 1.
- C. Oriented Strand Board (OSB): NIST DOC PS 2, Exposure 1.

2.2 DECK REPAIR/REPLACEMENT MATERIALS

- A. Metal Deck Repair Materials:
 - 1. Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:
 - a. Gage, rib depth, rib configuration to match existing; three span; lapped and stitched joints.
 - b. Sheet Steel: ASTM A653/A653M, Grade A structural quality; with G90 coating (galvanized).
 - 2. Fasteners:

- a. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.
- b. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 (4.8 mm) minimum diameter.
- 3. Accessories: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.

2.3 ROOFING PATCHING AND REPLACEMENT MATERIALS

- Use roofing infill materials matching existing membrane roofing system materials unless otherwise indicated.
- B. Wood Blocking, Curbs, Cants and Nailers: Specified in Division 06 Section "Miscellaneous Rough Carpentry."
 - 1. Reuse existing wood components that exhibit no signs of deterioration or other conditions detrimental to securement of new roofing system in conformance with specified requirements.
- C. Fasteners: Factory-coated steel fasteners with metal plates listed in FM / UL Approvals, and acceptable to new roofing system manufacturer.

2.4 TEMPORARY ROOFING MATERIALS

A. Design and selection of materials for temporary roofing are responsibilities of Contractor.

2.5 TEMPORARY ROOF DRAINAGE

A. Design and selection of materials for temporary roof drainage are responsibilities of the Contractor.

PART 3 - EXECUTION

3.1 PREPARATION, GENERAL

- A. Protection of In-Place Conditions: Protect existing roofing system that is indicated not to be reroofed.
 - 1. Loosely lay 1-inch minimum thick, molded expanded polystyrene (EPS) insulation over the roofing membrane in areas indicated.
 - a. Loosely lay 15/32-inch plywood or OSB panels over EPS. Extend EPS past edges of plywood or OSB panels a minimum of 1 inch.
 - 2. Limit traffic and material storage to areas of existing roofing membrane that have been protected.
 - 3. Maintain temporary protection and leave in place until replacement roofing has been completed. Remove temporary protection on completion of reroofing.
- B. Shut off rooftop utilities and service piping before beginning the Work.

- C. Test existing scuppers and related piping through attic space to verify that they are not leaking, blocked or restricted.
 - 1. Immediately notify Architect of any leaking, blockages or restrictions.
- D. Coordinate with Owner to shut down air-intake equipment in the vicinity of the Work.
 - 1. Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.
- E. Pollution Control: Comply with environmental regulations of authorities having jurisdiction. Limit spread of dust and debris.
 - Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 2. Remove debris from building roof by chute, hoist, or other device that will convey debris to grade level.
- F. Refrigerant: Before starting re-roofing preparation, remove refrigerant from mechanical equipment to be removed and reinstalled, according to 40 CFR 82 and regulations of authorities having jurisdiction.
- G. Temporary Weather Protection: During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.
- H. Roof Scupper Protection: Maintain roof scuppers and related conductors in functioning condition to ensure roof drainage at end of each workday.
 - 1. If scuppers and related conductors are temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding.
 - a. Do not permit water to enter into or under existing membrane roofing system components that are to remain.
 - 2. Prevent debris from entering or blocking roof scuppers and conductors.
 - a. Remove roof scupper plugs at end of each workday, when no work is taking place, or when rain is forecast.

3.2 ROOF TEAR-OFF

- A. Notify Owner each day of extent of roof tear-off proposed for that day and obtain authorization to proceed.
- B. Lower removed roofing materials to ground and onto lower roof levels, using dust-tight chutes or other acceptable means of removing materials from roof areas.
- C. Remove pavers and accessories from roofing membrane.
- D. Roof Tear-Off: Remove existing roofing membrane and other membrane roofing system components down to the deck.

- Remove all roof insulation and all underlying lightweight concrete to the structural steel deck to remain.
 - a. Roof A is indicated as 100% wet insulation on the Moisture Survey dated 10/26/2024. Refer to the Moisture Survey for additional information.
- 2. Remove all fasteners from deck or cut fasteners off slightly above deck surface.
- E. Inspect wood blocking, curbs, and nailers for deterioration and damage.
 - 1. Replace existing wood components that exhibit signs of deterioration or other conditions detrimental to securement of roofing system components, including roof edge flashings.
 - 2. Reuse of Existing Wood Nailers: Permitted where type, size and securement are in accordance with Factory Mutual Loss Prevention Data Bulletin 1-49; and existing wood nailers exhibit no signs of deterioration or other conditions detrimental to securement of new roofing system in conformance with specified requirements.

3.3 DECK PREPARATION

- A. Inspect deck after tear-off of membrane roofing system.
- B. Verify that deck is sound and dry.
- C. If broken or loose fasteners that secure deck panels to one another or to structure are observed or if deck appears or feels inadequately attached, immediately notify Architect. Do not proceed with installation until directed by Architect.
- D. Unsuitable Deck: If deck surface is not suitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify Architect. Do not proceed with installation until directed by Architect.

3.4 DECK REPAIR/REPLACEMENT

- A. Repair existing deck to provide smooth working surface for installation of roof system.
 - 1. Replace deck that cannot be repaired to sound condition.
- B. Metal Deck Reattachment:
 - Mechanically reattach loose sections of deck to steel support members 12 inches (300 mm) on center (at every other rib) and 6 inches (150 mm) on center (at every rib) in roof corner and roof perimeter areas.
 - 2. Side Laps: Mechanically fasten 18 inches (450 mm) on center.
 - 3. Mechanically fasten steel deck to supporting member at each deck side lap, regardless of spacing.
 - 4. Overlap steel deck end laps minimum 2 inches (50 mm); mechanically attach at the above listed factors.
- C. Metal Deck Replacement:

- 1. Remove defective metal decking and examine supports; if supports are unsound, notify Architect and obtain direction before proceeding with deck replacement.
- 2. Install new metal decking in accordance with SDI, Design Manual for Composite Decks, Form Decks, Roof Decks

3.5 ROOFING INFILL, PATCHING AND REPLACEMENT MATERIALS INSTALLATION

A. Immediately after removal of selected portions of existing membrane roofing system, and inspection and repair, if needed, of deck, fill in the tear-off areas with new membrane roofing system construction as specified.

3.6 EQUIPMENT REMOVAL AND REINSTALLATION

- A. General: Remove, store, protect and reinstall rooftop equipment as required to accommodate roof tear-off and subsequent roofing work.
 - 1. Raise roof curbs, equipment mountings and other roof penetration flashings as required to accommodate additional insulation thickness and maintain base flashing height of not less than 8 inches (200 mm), unless otherwise indicated.
 - a. Provide wood assemblies and additional support with miscellaneous galvanized steel angles, as required to rebuild or raise existing roof curbs.
 - b. Extend vent and soil stacks and other roof penetrations, using matching materials, as required to accommodate additional insulation thickness.
 - 2. Extend existing ductwork inside existing roof curbs to accommodate extension of curb.
 - a. Use materials matching existing ductwork; minimum of 20 ga. (0.9 mm) galvanized duct with Pittsburgh folded seam slip joints-typical.
- B. Rooftop Equipment, Electrical: Engage a qualified electrician to perform electrical disconnection and reconnection.
 - Disconnect, reroute, extend and reconnect existing power feeders and control circuits (conduit and wiring) feeding the existing roof mounted equipment which is indicated to be raised and/or relocated to a new elevation/location and as required by the Contract.
 - 2. Provide weatherproof exterior junction boxes, when required.
 - 3. Make connections to mechanical equipment by using a maximum 18-inch (450-mm) length of liquid-tight flexible steel conduit.
 - a. Rigid connections to mechanical equipment are not permitted.
 - 4. Relocate and reconnect existing disconnect switches presently installed on existing roof mounted equipment indicated to be raised and/or relocated.
- C. Prevent discharge of refrigerant. Verify that refrigerant has been properly recovered from equipment to be removed.
- D. Reinstall designated equipment.

- Make electrical reconnections in accordance with applicable code and authorities having jurisdiction.
- 2. Recharge HVAC equipment with refrigerant required by equipment manufacturer.
- 3. Coordinate with Owner to test equipment and verify proper operation.

3.7 FASTENER PULL-OUT TESTING

A. Fastener Testing: Perform fastener pullout tests according to SPRI FX-1, and submit test report prior to installing new roofing system.

3.8 BASE FLASHING REMOVAL

- A. Remove existing base flashings where indicated on Drawings.
 - 1. Clean substrates of contaminants, such as asphalt, sheet materials, dirt, and debris.
- B. Do not damage metal counter flashings that are to remain.
 - 1. Replace metal counter flashings damaged during removal with counter flashings of same metal, weight or thickness, and finish.

3.9 DISPOSAL

- A. Collect demolished materials and place in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
 - 1. Storage or sale of demolished items or materials on-site is not permitted.
- B. Transport and legally dispose of demolished materials off Owner's property.

3.10 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by preparation for re-roofing operations. Return adjacent areas to condition existing before operations began.

END OF SECTION 07

SECTION 07 21 50 - SOUND ATTENUATION INSULATION

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: Glass fiber acoustical insulation for interior wall partitions as indicated.

1.3 MATERIALS PROVIDED IN OTHER SECTIONS

- A. Division 09 Section "Gypsum Drywall".
- B. Division 09 Section "Non-Structural Metal Framing".

1.4 REFERENCES

- A. American Society for Testing and Materials (ASTM).
 - C 665 Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
 - 2. E 84 Test Method for Surface Burning Characteristics of Building Materials.
 - 3. E 119 Test Method for Fire Tests of Building Construction Materials.
 - 4. E 136 Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C.

1.5 SUBMITTALS

A. Product Data: Submit product literature, samples, and installation instructions for approved insulation.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Protect insulation from physical damage and from becoming wet, soiled, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation.
- B. Label insulation packages to include material name, production date and/or product code.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Owens Corning, as specified; equivalent products by CertainTeed or Johns Manville may be submitted for approval.

2.2 MATERIAL

- A. Type: OC "Sound Attenuation Batts", unfaced glass fiber acoustical insulation complying with ASTM C 665, Type I.
 - 1. Size:
 - a. Thickness: as detailed, to provide indicated STC, to suit depth of stud.
 - b. Width: To suit stud spacing
 - 2. Surface Burning Characteristics: When tested in accordance with ASTM E 84.
 - a. Maximum flame spread: 10
 - b. Maximum smoke developed: 10
 - 3. Combustion Characteristics: Noncombustible, tested in accordance with ASTM E 136.
 - 4. Fire Resistance Ratings: Wall assemblies containing Owens Corning SAB have achieved fire resistance ratings when tested in accordance with ASTM E119. See listing documents for full assembly construction details.
 - 5. Sound Transmission Class: STC required, as indicated in detail.
 - 6. Dimensional Stability: Linear shrinkage less than 0.1 %
- B. Concealed Blanket Type Insulation:
 - Poly-encapsulated, formaldehyde-free fiberglass insulation above indicated ceilings.
- 2.3 Blown-in cellulose or Spray Applied:
 - A. Criteria:
 - 1. ASTM C 764, Type I
 - 2. ASTM E136
 - 3. ASTM E 84 Flame Spread 5 or less, Smoke Developed 5 or less

PART 3 - EXECUTION

3.1 INSPECTION AND PREPARATION

- A. Examine substrates and conditions under which insulation work is to be performed. A satisfactory substrate is one that complies with the requirements of the section in which substrate and related work is specified.
- B. Obtain installer's written report listing conditions detrimental to performance of work in this section. Do not proceed with installation of insulation until unsatisfactory conditions have been corrected.
- C. Clean substrates of substances are harmful to insulation.

3.2 INSTALLATION-GENERAL

- A. Comply with manufacturer's instructions for particular conditions of installation in each case.
- B. Sound Attenuation Batts may be friction-fit in place until the interior finish is applied. Install Batts to fill the entire stud cavity. If stud cavity is less than 96" in height, cut lengths to friction fit against floor and ceiling tracks. Walls with penetrations require that insulation be carefully cut to fit around outlets, junction boxes and other irregularities.
- C. Where walls are not finished on both sides or insulation does not fill the cavity depth, provide manufacturer approved supplementary support to hold insulation in place.
- D. Where insulation must extend higher than 8 feet, temporary support can be provided to hold the product in place until the finish material is applied.
- E. Extend fiberglass insulation to full thickness as shown over the entire surface. Cut and fit tightly around obstructions and fill voids with insulation. Install a single layer, unless otherwise shown, with joints staggered in one direction.
 - 1. Provide two layers for applications more than 6".

3.3 PROTECTION

A. Protect installed insulation as recommended by the approved manufacturer.

END OF SECTION 07 21 00

SECTION 075423 - THERMOPLASTIC POLYOLEFIN (TPO) ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

- 1. Adhered thermoplastic polyolefin (TPO) roofing system on metal deck, including:
- 2. Vapor retarder.
- 3. Roof insulation.
- 4. Roof insulation cover board.
- 5. Walkway material.

B. Related Sections:

- 1. Division 06 Section "Miscellaneous Rough Carpentry" for wood nailers, wood cants, curbs, and blocking.
- 2. Division 07 Section "Preparation for Re-Roofing" for removal of existing roof system.
- 3. Division 07 Section "Sheet Metal Flashing and Trim" for shop-formed sheet metal items including roof drainage system items, roof penetration flashings, and counterflashings.

1.2 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D1079 "Standard Terminology Relating to Roofing and Waterproofing" and applicable edition of NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" and NRCA's Glossary for definition of terms related to roofing work in this Section.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Roofing Conference: Conduct conference at Project site.
 - 1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
 - 2. Review drawings and specifications.
 - 3. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 - 4. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

- 5. Examine substrate conditions and finishes for compliance with requirements, including flatness and fastening.
- 6. Review structural loading limitations of roof deck during and after roofing.
- 7. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
- 8. Review governing regulations and requirements for insurance and certificates if applicable.
- Review temporary protection requirements for the roofing system during and after installation.
- 10. Review roof observation and repair procedures after roofing installation.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Base flashings and membrane terminations.
 - a. Indicate details meet the requirements of NRCA and FMG required by this Section.
 - 2. Tapered insulation, including slopes and crickets.
 - 3. Roof plan showing types and orientation of roof deck and orientation of membrane roofing and fastening spacings and patterns for mechanically fastened membrane roofing if applicable.
 - 4. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
- C. Samples for Verification: For the following products:
 - 1. Sheet roofing, of color specified, including T-shaped side and end lap seam.
 - 2. Walkway pads or rolls.
 - Metal termination bars.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer, Manufacturer and Roofing Inspector.
 - 1. Include letter from Manufacturer written for this Project indicating approval of Installer.
- B. Contractor's Product Certificate: Submit signed certification, on company letterhead, indicating products intended for Work of this Section, including product names and numbers and

manufacturers' names, with statement indicating that products to be provided meet the requirements of the Contract Documents.

C. Manufacturer Certificates:

- 1. Submit evidence of compliance with requirements specified in "Performance Requirements" Article.
- 2. Product Compatibility: Indicate manufacturer has verified compatibility of roofing system components, including but not limited to: Roofing membrane, flashing sheets, adhesives, and sealants.
- D. Warranties: Unexecuted sample copies of special warranties.
- E. Inspection Reports: Reports of Roofing Inspector. Include weather conditions, description of work performed, tests performed, defective work observed, and corrective actions taken to correct defective work.
 - 1. Submit reports within 48 hours after inspection.
- F. Manufacturer's Instructions: Submit copy of manufacturer's written installation instructions for specified roofing system.

1.6 CLOSEOUT SUBMITTALS

- A. Executed copies of warranties.
- B. Maintenance Data: To include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of five years' experience installing products comparable to those specified, able to communicate verbally with Contractor, Architect, and employees, and qualified by the manufacturer to install manufacturer's product and furnish warranty of type specified.
- B. Manufacturer Qualifications: Approved manufacturer listed in this Section, for roofing systems comparable to that specified for this Project, with minimum five years' experience in manufacture of thermoplastic roof membrane products in successful use in similar applications.
 - 1. Substitutions following award of contract are not allowed except as stipulated in Division 01 General Requirements.
 - 2. Approved manufacturers must meet separate requirements of Submittals Article.
- C. Roofing Inspector Qualifications: A technical representative of manufacturer not engaged in the sale of products and experienced in the installation and maintenance of the specified roofing system, qualified to perform roofing observation and inspection specified in Field Quality Control Article, to determine Installer's compliance with the requirements of this Project, and approved by the manufacturer to issue warranty certification. The Roofing Inspector shall be one of the following:

- 1. An authorized full-time technical employee of the manufacturer.
- 2. An independent party certified as a Registered Roof Observer by the International Institute of Building Enclosure Consultants (formerly the Roof Consultants Institute) retained by the Contractor or the Manufacturer and approved by the Manufacturer.
- D. Manufacturer's Installation Instructions: Obtain and maintain on-site access to manufacturer's written recommendations and instructions for installation of products.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
 - Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.9 PROJECT / FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.
- B. Daily Protection: Coordinate installation of roofing so insulation and other components of roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.
 - 1. Provide tie-offs at end of each day's work to cover exposed roofing and insulation with a course of roofing sheet securely in place with joints and edges sealed.
 - 2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing.
 - 3. Remove temporary plugs from roof drains at end of each day.
 - 4. Remove and discard temporary seals before beginning work on adjoining roofing.

1.10 WARRANTY

- A. Manufacturer's Warranty: Roof System Manufacturer's standard form in which Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within warranty period, as follows.
 - 1. Form of Warranty: Manufacturer's standard warranty form.
 - 2. Scope of Warranty: Work of this Section and including sheet metal details and termination details installed by the roof system Installer and approved by the Roof System Manufacturer.
 - 3. Warranty Period: 20 years from date of completion.
- B. Manufacturer Inspection Services: By manufacturer's technical representative, to report maintenance responsibilities to Owner necessary for preservation of Owner's warranty rights. The cost of manufacturer's inspections is included in the Contract Sum.
 - 1. Inspections to occur in following years: 2, 5, 10 and 15 following completion.
- C. Installer Warranty: Installer's warranty signed by Installer, as follows.
 - 1. Form of Warranty: Form acceptable to Roofing Manufacturer and Owner.
 - 2. Scope of Warranty: Work of this Section.
 - 3. Warranty Period: 2 years from date of completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: The roof system specified in this Section is based upon products of Tremco CPG Inc, Beachwood, OH, (800) 562-2728, www.tremcoroofing.com that are named in other Part 2 articles. Provide specified products or comparable products of one of the following.
 - 1. GAF "Everguard Extreme TPO".
 - 2. Siplast Inc., "Parasolo TPX Membrane".
- B. Source Limitations: Obtain components for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.
 - 1. Accelerated Weathering: Roofing system shall withstand 10,000 hours of exposure when tested according to ASTM G152, ASTM G154, or ASTM G155.

- 2. Impact Resistance: Roof membrane shall resist impact damage when tested according to ASTM D3746/D3746M, ASTM D4272/D4272M, or the "Resistance to Foot Traffic Test" in FM Approvals 4470.
- B. Roofing System Design: Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency in accordance with ANSI/FM 4474, UL 580, or UL 1897, and to resist uplift pressures calculated in accordance with ASCE-7-16 and applicable code.
 - All Zones (Corner, Perimeter, and Field-of-Roof) Uplift Pressures: 150 psf minimum all zones.
 - a. All of Roof Area A is located in Zone 2 which requires a 150 psf minimum uplift pressure.
- C. Flashings and Fastening: Comply with requirements of Division 07 Sections "Sheet Metal Flashing and Trim" and "Roof Specialties." Provide base flashings, perimeter flashings, detail flashings and component materials and installation techniques that comply with requirements and recommendations of the following:
 - 1. FM Global 1-49: Loss Prevention Data Sheet for Perimeter Flashings.
 - 2. FM Global 1-29: Loss Prevention Data Sheet for Above Deck Roof Components.
 - 3. NRCA Roofing Manual (Sixth Edition) for construction details and recommendations.
 - 4. SMACNA Architectural Sheet Metal Manual (Seventh Edition) for construction details.
 - 5. Comply with requirements of Division 07 Section "Sheet Metal Flashing and Trim".
- D. Exterior Fire-Test Exposure: ASTM E108 or UL 790, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.
- 2.3 MATERIALS, GENERAL
 - A. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.
- 2.4 THERMOPLASTIC MEMBRANE MATERIALS
 - A. TPO Roof Membrane:
 - Thermoplastic Polyolefin (TPO) Sheet: Internal fabric reinforced, ASTM D6878.
 - a. Basis of design product: Tremco, TremPly Max TPO Single Ply Roof Membrane.
 - b. Breaking Strength, 50 mils, ASTM D751: 305 lbf by 290 lbf (454 kg/m by 432 kg/m)
 - c. Tear Strength, 50 mils, ASTM D751: 70 lbf by 110 lbf (104 kg/m by 164 kg/m).

- d. Elongation at Break, ASTM D751: 30 percent.
- e. Membrane Thickness, minimum nominal: 50 mils (1.3 mm).
- f. Exposed Face Color: White.
- g. Solar Reflectance Index (SRI), ASTM E1980: 87 (White, initial).
- h. Weather Resistance, ASTM G155: Not greater than 46,000 KJ (m2 * nm) at 340 nm.
- B. Sheet Flashing: Manufacturer's standard, smooth-backed, sheet flashing of same material, type, reinforcement, thickness, and color as TPO sheet membrane.

2.5 AUXILIARY ROOFING MATERIALS

- A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use, and compatible with membrane roofing.
 - 1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
- B. Membrane Bonding Adhesive:
 - 1. Contact-type adhesive, low odor, VOC-compliant, for bonding TPO single ply membranes and flashings to substrates.
 - a. Basis of design product: Tremco, TremPly TPO Bonding Adhesive LV3.
 - b. VOC, maximum, ASTM D3960: 250 g/L.
- C. Flashing Membrane Adhesive: Same as membrane bonding adhesive.
- D. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch (25 mm by 3 mm) thick; with anchors.
- E. Metal Battens: Manufacturer's standard, aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch wide by 0.05 inch (25 mm wide by 1.3 mm) thick, pre-punched.
- F. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening components to substrate, and acceptable to membrane roofing system manufacturer.
- G. Joint Sealant: Elastomeric joint sealant compatible with roofing materials, with movement capability appropriate for application.
 - 1. Joint Sealant, Polyurethane: ASTM C920, Type S, Grade NS, Class 50 single-component moisture curing sealant, formulated for compatibility and use in dynamic and static joints; paintable.
 - a. Basis of design product: Tremco, TremSEAL Pro.

- b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 40 g/L.
- c. Hardness, Shore A, ASTM C661: 40.
- d. Adhesion to Concrete, ASTM C794: 35 pli.
- e. Tensile Strength, ASTM D412: 350 psi (2410 kPa).
- f. Color: Closest match to substrate.
- H. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer.
- I. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.6 VAPOR RETARDER

- A. Vapor Retarder Membrane:
 - 1. Self-Adhering Sheet: 40 mil- (1.0 mm-) thick polyethylene film laminated to layer of SBS rubberized asphalt adhesive; maximum permeance rating of 0.1 perm (6 ng/Pa x s x sq. m); with slip-resisting surface and release-paper backing. Provide primer when recommended by vapor-retarder manufacturer.
 - a. Basis of design product: Tremco, AVC Membrane.
 - b. Permeance, maximum, ASTM E 96: 0.05 perms.
 - c. Tensile Strength, minimum, ASTM D2523: 25 lbf/in (4.3 kN/m).
 - d. Elongation, minimum, ASTM D412: 250 percent.
 - e. Low Temperature Flexibility, ASTM D1970: Unaffected, -32 deg. C.
 - f. Adhesion to Plywood, ASTM D903: 6 lbf/in (1.05 kN/m).
- B. Vapor Retarder Primer:
 - 1. Primer for Self-Adhering Sheet Air and Vapor Control Membrane: quick drying SIS primer.
 - a. Basis of design product: Tremco, AVC Membrane Primer.
 - b. Solids: Not less than 50 percent.

2.7 ROOF INSULATION MATERIALS

A. General: Preformed roof insulation boards manufactured or approved by roofing manufacturer, selected from insulation manufacturer's standard sizes, suitable for application, and of thicknesses indicated.

- 1. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches (1:48) unless otherwise indicated.
- 2. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated, not less than two times the roof slope.
- B. Roof Insulation: Provide roof insulation product in thicknesses indicated in Part 3 as follows:
 - 1. Board Insulation, Polyisocyanurate: CFC- and HCFC- free, with recycled content glass-fiber mat facer on both major surfaces, ASTM C1289 Type II Class 1.
 - a. Basis of design product: Tremco, Trisotech Insulation; Altlas Roofing Corp., ACFoam II; Johns Manville, ENRGY 3, or other manufacturer's approved polyisocyanurate.
 - b. Compressive Strength, ASTM D1621: Grade 2: 20 psi (138 kPa).
 - c. Conditioned Thermal Resistance at 75 deg. F (24 deg. C): 14.4 at 2.5 inches (50.8 mm) thick.

2.8 ROOF INSULATION ACCESSORIES

A. Cover Board:

- 1. Gypsum panel, glass-mat-faced, primed, ASTM C1177/C1177M.
 - a. Basis of design product: Tremco/GP Gypsum DensDeck Prime.
 - b. Thickness: 1/2 inch (12 mm).
- B. Insulation Cant Strips: ASTM C208, Type II, Grade 1, cellulosic-fiber insulation board.
- C. Tapered Edge Strips: ASTM C208, Type II, Grade 1, cellulosic-fiber insulation board.
- D. Insulation Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer.
 - 1. Basis of Design: OMG #12 Standard with OMG 3" Ribbed Galvalume Plate, or manufacturer's approved equal.

2.9 WALKWAY MATERIALS

A. Walkway Material:

- 1. Walkway roll, reinforced TPO membrane roll with serrated slip-resistant surface fabricated for heat welding to compatible TPO membrane surface.
 - a. Basis of design product: Tremco, TremPly TPO Walkway Roll.
 - b. Roll Width: 34 inches x 50 ft (864 mm x 15.24m).

- c. Thickness: 0.125 inch (3.1 mm).
- d. Color: Gray.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
 - 1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.
 - 2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
 - 3. Verify that substrate is sound and dry.
 - 4. Steel Roof Deck:
 - a. Verify that deck is securely fastened and properly supported with no projecting fasteners and with no adjacent units in excess of 1/16 inch (1.6 mm) out of plane relative to adjoining deck.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof scuppers and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.3 INSTALLATION, GENERAL

- A. Install roofing system in accordance with manufacturer's written instructions and approved details.
- B. Install wood cants, blocking, curbs, and nailers in accordance with requirements of Division 06 Section "Miscellaneous Rough Carpentry."
- C. NRCA Installation Details: Install roofing system in accordance with applicable NRCA Manual Plates and NRCA recommendations; modify as required to comply with manufacturer's approved details and perimeter fastening requirements of FM Global references if applicable.

3.4 VAPOR-RETARDER INSTALLATION

- A. Vapor Retarder Installation, General: Completely seal vapor retarder/air barrier at terminations, obstructions, and penetrations to prevent air movement into roofing system. Seal vapor retarder/air barrier to air barrier in adjacent construction at perimeter of roofing system.
- B. Self-Adhering Sheet Vapor Retarder: Prime substrate as required by manufacturer. Install self-adhering sheet vapor retarder over area to receive vapor retarder, side and end lapping each sheet a minimum of 3-1/2 inches (90 mm) and 6 inches (150 mm), respectively. Seal laps by rolling.

3.5 INSULATION INSTALLATION

- A. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation.
- C. Tapered Insulation and Crickets: Install tapered insulation under area of roofing to conform to slopes indicated.
 - 1. Where crickets are indicated or required to provide positive slope to drain, make slope of crickets minimum of two times the roof slope, not less than 1/4 inch in 12 inches (1:48).
- D. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches (70 mm) or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches (150 mm) in each direction.
 - 1. Tapered Insulation System for Flat Roof Deck: Install insulation as follows:
 - a. Minimum total thickness of Continuous Insulation: 4.2 inches at base of drain sump, 5.2 inches minimum at top of drain sump.
 - 1) Minimum thickness of base layer: 1.5 inches.
 - 2) Minimum thickness of each subsequent layer: 1.5 inches.
 - b. Continuous Insulation R-value: Not less than 30.
 - 2. Insulation Drain Sumps: Tapered insulation sumps, not less than 4 by 4 ft. (1,200 by 1,200 mm), sloped to roof drain.
 - a. Sump to maximum depth of not more than 1 inch (25 mm) less than the Project-stipulated continuous insulation thickness based upon code requirements.
- E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

- F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
 - 1. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- G. Mechanically Fastened Insulation: Install each layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.
 - 1. Fasten insulation as required for preliminary attachment per FMG Data Sheet 1-29.
- H. Cover Boards: Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches (150 mm) in each direction. Loosely butt cover boards together.
 - 1. Secure cover boards through base layers of insulation into the steel structural deck to resist uplift pressure at corners, perimeter, and field of roof.
 - a. Basis of Design: 20 fasteners per 4'x8' board all zones, or as required by manufacturer to meet uplift resistance. Adjust as required based on the results of fastener pull testing.

3.6 ADHERED MEMBRANE ROOFING INSTALLATION

- A. Adhere membrane roofing over area to receive roofing and install according to membrane roofing system manufacturer's written instructions.
- B. Start installation of membrane roofing in presence of membrane roofing system manufacturer's technical personnel.
- C. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- D. Solvent-Based Bonding Adhesive: Apply to substrate and underside of membrane roofing at rate required by manufacturer and allow adhesive to become tacky before installing membrane roofing; do not allow adhesive to fully dry. Roll membrane into adhesive. Do not apply adhesive to splice area of membrane.
- E. In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, and perimeter of roofing.
- F. Apply membrane roofing with side laps shingled with slope of roof deck where possible.
- G. Welded Seams: Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.
 - 1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet membrane.
 - 2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.

- 3. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.
- H. Install membrane roofing and auxiliary materials to tie in to existing TPO roofing to maintain weathertightness of transition.

3.7 BASE FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.
- B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.
- D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.
- E. Seal top termination of base flashing with a metal termination bar and a continuous bead of joint sealant.

3.8 WALKWAY INSTALLATION

A. Flexible Walkways: Install walkway products in locations indicated. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.9 FIELD QUALITY CONTROL

- A. Roofing Inspector: Contractor shall engage a qualified roofing inspector to perform roof tests and inspections and to prepare test reports.
 - 1. Engage a qualified roofing inspector for a minimum of 2 full-time days on site, per 40-hour crew week, to perform roof tests and inspections and to prepare start up, interim and final reports. Roofing Inspector's quality assurance inspections shall comply with applicable criteria established in NRCA's "Quality Control and Quality-assurance Guidelines for the Application of Membrane Roofing Systems."
- B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.
- C. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.
- D. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.10 PROTECTING AND CLEANING

A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for

deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

- B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements; repair substrates; and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07 54 23

SECTION 076200 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

- 1. Roof drainage sheet metal fabrications.
- 2. Low-slope roof sheet metal fabrications.
- 3. Miscellaneous sheet metal flashing and trim.

B. Related Requirements:

1. Division 07 "Thermoplastic Polyolefin (TPO) Roofing" low slope membrane roofing section for installing sheet metal flashing and trim integral with roofing and for related warranty requirements.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.
- B. Shop Drawings: For sheet metal flashing and trim.
 - 1. Include plans, elevations, sections, and attachment details.
 - 2. Include identification of material, thickness, weight, and finish for each item and location in Project.
 - 3. Indicate details meet the requirements of SMACNA and NRCA required by this Section.
 - 4. Detail formed flashing and trim at scale of not less than 1-1/2 inches per 12 inches (1:10).
- C. Samples for Verification: For each type of exposed finish.

1.3 INFORMATIONAL SUBMITTALS

A. Contractor's Product Certificates: For each type of coping and roof edge flashing that is ANSI/SPRI ES-1 tested.

1.4 CLOSEOUT SUBMITTALS

A. Warranties: Manufacturer's executed warranty documents. Submit prior to acceptance of Work.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
- B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.7 WARRANTY

A. Refer to warranty requirements of Division 07 Section Thermoplastic Polyolefin (TPO) Roofing for terms and conditions of warranties covering work of this Section.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
- C. Flashings and Fastening: Comply with requirements of Division 07 roofing sections. Provide base flashings, perimeter flashings, detail flashings and component materials and installation techniques that comply with the requirements and recommendations of the following:
 - 1. FM Global 1-49: "Property Loss Prevention Data Sheet for Perimeter Flashings."
 - 2. FM Global 1-29: "Property Loss Prevention Data Sheet for Above Deck Roof Components."
 - 3. NRCA: "The NRCA Roofing Manual" for construction details and recommendations.
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects.

2.2 SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

- B. TPO-Coated Steel Sheet: Provide zinc-coated (galvanized) steel sheet according to ASTM A653/A653M, G90 (Z275) coating designation; prefinished with non-reinforced TPO membrane; for formed flashings to receive heat-weldable, compatible with single-ply membrane roofing specified in Division 07 Thermoplastic Polyolefin (TPO) Roofing
 - 1. Basis-of-Design Product: Tremco, Tremply TPO Coated Metal.
 - 2. Sheet Metal Thickness: Zinc-coated steel, nominal 0.028-inch/24 ga. (0.71-mm) thickness.
 - 3. Finish: Laminated with 0.020 inch/20 mil (0.50 mm) thick, unreinforced TPO membrane on exposed side and finished with clear acrylic coating on non-exposed side.
 - a. Color: Match color of roof membrane specified in Division 07 Section Thermoplastic Polyolefin (TPO) Roofing
- C. Stainless-Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304, dead soft, fully annealed; with smooth, flat surface.
 - 1. Finish: ASTM A480/A480M, No. 2D (dull, cold rolled).
- D. Copper Sheet: ASTM B370, cold-rolled copper sheet, H00 or H01 temper.
 - 1. Non-patinated, Exposed Finish: Mill.

2.3 UNDERLAYMENT MATERIALS

- A. Self-Adhering, High-Temperature Underlayment: Self-adhering, cold-applied, sheet underlayment, minimum 30 mils (0.76 mm) thick, consisting of slip-resistant, polyethylene-film top surface laminated to a layer of SBS-modified asphalt adhesive, with release-paper backing. Provide primer when recommended by underlayment manufacturer.
 - 1. Basis of design product: Self-Adhering, High-Temperature Underlayment.
 - 2. Permeance, maximum, ASTM E 96: 0.05 perms.
 - 3. Thermal Stability, ASTM D 1970: Stable after testing at 240 deg F (116 deg C).
 - 4. Low Temperature Flexibility, ASTM D 1970: Unaffected, -20 deg. F (29 deg C).

2.4 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.
- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by the manufacturer of primary sheet metal or manufactured item.
 - 1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.

- a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on the weather side of metal.
- b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
- 2. Fasteners for Zinc-Coated(Galvanized) and Aluminum-Zinc Alloy-Coated Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel according to ASTM A153/A153M or ASTM F2329.
- 3. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.
- 4. Fasteners for Copper Sheet: Copper, hardware bronze or passivated Series 300 stainless steel.

C. Solder:

- 1. For Stainless Steel: ASTM B32, Grade Sn60 or Grade Sn96, with acid flux of type recommended by stainless steel sheet manufacturer.
- 2. For Copper: ASTM B32, Grade Sn50, 50 percent tin and 50 percent lead.
- D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
- E. Elastomeric Sealant: ASTM C920, elastomeric polyurethane at concealed joints and silicone at exposed joints; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

2.5 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to the greatest extent possible.
 - 1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
 - 2. Obtain field measurements for accurate fit before shop fabrication.
 - 3. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
 - 4. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.
- B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines indicated on

Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

- C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.
 - 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.
 - 2. Use lapped expansion joints only where indicated on Drawings.
- D. Sealant Joints: Where movable, non-expansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.
- E. Fabricate cleats and attachment devices from the same material as accessory being anchored or from compatible, noncorrosive metal.
- F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.
- G. Seams, Soldered: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- H. Do not use graphite pencils to mark metal surfaces.

2.6 ROOF-DRAINAGE SHEET METAL FABRICATIONS

- A. Parapet Scuppers: Fabricate scuppers to dimensions required, with closure flange trim to exterior, 4-inch- (100-mm-) wide wall flanges to interior, and base extending 4 inches (100 mm) beyond cant or tapered strip into field of roof. Fabricate from the following materials:
 - 1. TPO Coated Galvanized Steel or Aluminum-Zinc Alloy-Coated Steel: (0.71 mm) 0.028 inch/24 ga. thick.
- B. Conductor Heads: Fabricate conductor heads with flanged back and stiffened top edge and of dimensions and shape required, complete with outlet tubes, exterior flange trim, and built-in overflows. Fabricate from the following materials:
 - 1. Stainless Steel: 0.025 inch/24 ga. (0.63 mm) thick.

PART 3 - EXECUTION

3.1 UNDERLAYMENT INSTALLATION

A. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free. Prime substrate if recommended by underlayment manufacturer. Comply with temperature restrictions of underlayment of the manufacturer for installation; use primer for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than 6 inches (150 mm) staggered 24 inches (600 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). Roll laps and edges with roller. Cover underlayment within 14 days.

3.2 INSTALLATION, GENERAL

- A. Install sheet metal flashing and trim to comply with details indicated and recommendations of cited sheet metal standard that apply to installation characteristics required unless otherwise indicated on Drawings.
 - 1. Space cleats are not more than 12 inches (300 mm) apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
 - 2. Do not use graphite pencils to mark metal surfaces.
- B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
 - 1. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet (3 m) with no joints within 24 inches (600 mm) of corner or intersection.
 - 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with sealant concealed within joints.
 - 2. Use lapped expansion joints only where indicated on Drawings.
- D. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws.
- E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
- F. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to width of 1-1/2 inches (38 mm); however, reduce pre-tinning where pre-tinned surface would show in completed Work.
 - 1. Do not solder metallic-coated steel and aluminum sheet.
 - 2. Do not use torches for soldering.

3.3 ROOF-DRAINAGE SYSTEM INSTALLATION

- A. General: Install sheet metal roof-drainage items to produce a complete roof-drainage system according to cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.
- B. Parapet Scuppers: Continuously support scupper, set to correct elevation, and seal flanges to interior wall face, over cants or tapered edge strips, and under roofing membrane.

- 1. Anchor scupper closure trim flange to exterior wall and solder or seal with elastomeric sealant to scupper.
- 2. Loosely lock the front edge of the scupper with conductor head.
- 3. Solder or seal with elastomeric sealant exterior wall scupper flanges into back of conductor head.
- 4. Heat-weld TPO coated metal to TPO membrane per manufacturers specifications.
- C. Conductor Heads: Anchor securely to wall, with elevation of conductor head rim at minimum of 1 inch (25 mm) below scupper or gutter discharge.

3.4 ROOF FLASHING INSTALLATION

- A. Install sheet metal flashing and trim to comply with performance requirements and cited sheet metal standard.
 - 1. Provide concealed fasteners where possible, and set units true to line, levels, and slopes.
 - 2. Install work with laps, joints, and seams that are permanently watertight and weather resistant.
- B. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches (100 mm) over base flashing. Install stainless-steel draw band and tighten.
- C. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing.
 - 1. Insert counterflashing in reglets or receivers and fit tightly to base flashing.
 - 2. Extend counterflashing 4 inches (100 mm) over base flashing.
 - 3. Lap counterflashing joints minimum of 4 inches (100 mm).
- D. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with sealant and clamp flashing to pipes that penetrate roof.

3.5 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.6 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder.

- C. Clean off excess sealants.
- D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended by sheet metal flashing and trim manufacturer. Maintain sheet metal flashing and trim in clean condition during construction.
- E. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 076200

SECTION 07 84 00 - FIRESTOPPING

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: This section includes labor, materials and equipment necessary to complete the installation required for the items specified under this Section, including but not limited to:
 - 1. Firestopping of Through Penetrations in Fire Rated Assemblies.
 Only tested firestop systems shall be used in specific locations as follows: Penetrations for the passage of cables, conduit, and other electrical equipment through fire-rated vertical barriers (walls and partitions), horizontal barriers (floor/ceiling assemblies), and vertical service shaft walls and partitions.
 - Smoke and Acoustical Sealing in Non-Rated Assemblies
 Only tested Smoke & Acoustic systems shall be used in specific locations as follow:
 penetration for the passage of cables, conduits, and other electrical equipment through
 non-fire-rated vertical and horizontal partitions.
- B. Locations Requiring Firestopping Include, but not limited to, the following locations:
 - 1. Through-penetration firestopping in fire rated wall, floor, and roof construction.
 - 2. Construction gap and joint firestopping within fire-rated walls, floors or floor-ceiling assemblies.
 - 3. Construction gap and joint firestopping at intersections of the same or different materials in fire-rated construction.
 - 4. Construction gap and joint firestopping at the top of fire-rated walls.
 - 5. Openings around structural members that penetrate floors or walls.
 - 6. Penetrations in fire-rated partitions or walls containing fire rated doors.
 - 7. Openings between structurally separated sections of walls or floors.
 - 8. Expansion joints in fire rated walls and/or floors.
 - 9. Through-penetration and Construction gap and joint smoke stopping in smoke partitions.

1.3 RELATED SECTIONS

- A. Division 07 Section Joint Sealers.
- B. Division 09 Nonstructural metal framing.
- C. Division 27 Sections for Communications General
- D. Division 28 Sections for Electronic Security and Safety

1.4 REFERENCES

A. American Society for Testing and Materials (ASTM) Publications:

- ASTM E 84: Standard Test Methods for Surface Burning Characteristics of Building Materials.
- 2. ASTM E 119: Methods of Fire Tests of Building Construction and Materials.
- 3. ASTM C 679, "Standard Test Method for Tack-Free Time of Elastomeric Sealants"
- 4. ASTM E 814: Standard Method of Fire Tests of Through-Penetration Firestops.
- 5. ASTM C 719: Adhesion and Cohesion of Elastomeric Joint Sealants under Cyclic Movement.
- 6. ASTM C 920: Standard Specification of Elastomeric Joint Sealants.
- B. Underwriters Laboratories Inc. (UL) Publications:
 - 1. UL 263: Fire Tests of Building Construction and Materials
 - 2. UL 723: Surface Burning Characteristics of Building Materials.
 - 3. UL 1479: Fire Tests of Through-Penetration Firestops.
 - 4. UL 2079: Standard for Fire Tests of Joint Systems.
- C. Underwriters Laboratories "Fire Resistance Directory" (Current Year).
 - 1. Through-Penetration Firestop Device (XHJI)
 - 2. Fire-Resistive Ratings (BXUV) & (BXRH)
 - 3. Through-Penetration Firestop Systems (XHEZ)
 - 4. Fill, Void, or Cavity Material (XHHW)
 - 5. Joint Systems (XHBN)
 - 6. Forming Materials (XHKU)
 - 7. Perimeter Fire Containment Systems (XHDG)
- D. International Firestop Council Guidelines for Evaluating Firestop Systems Engineering Judgments
- E. Inspection Requirements: ASTM E 2174, "Standard Practice for On-site Inspection of Installed Fire Stops."
- F. Test Requirements: ASTM E 90, "Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements"
- G. Test Requirements: ASTM E 1966, "Standard Test Method for Fire Resistive Joint Systems"
- H. Test Requirements: ASTM E 84, "Standard Test Method for Surface Burning Characteristics of Building Materials."
- I. Test Requirements: ASTM E 2178, "Standard Test Method for Air Permeance of Building Materials"
- J. Test Requirements: ASTM E 2307, "Standard Test Method for Determining Fire Resistance of Perimeter Fire Barrier Systems Using Intermediate-Scale, Multi-story Test Apparatus"
- K. ANSI/TIA-EIA-569 "Commercial Building Standard for Pathway's and Spaces"

1.5 QUALITY ASSURANCE

- A. Do not commence work until submittals have been reviewed.
- B. Fire-Test-Response Characteristics: Provide through-penetration fire stop systems and fire-resistive joint systems that comply with specified requirements of tested systems.
- C. Fire stop System installation must meet requirements of ASTM E 814, UL 1479 or UL 2079 tested assemblies that provide a fire rating equal to that of construction being penetrated.
- D. Provide Installation by an experienced firestopping contractor, certified, licensed or otherwise qualified by the firestopping manufacturer to install the manufacturer's products as per specified requirements.
- E. Provide all firestopping materials manufactured by one manufacturer and manufactured in their own facilities and provide documentation of same.

- F. Installation must be conducted per manufacturer's written recommendations published in their literature and drawing details
- G. Provide materials tested to provide fire rating at least equal to that of the construction.
- H. For those firestop applications that exist for which no UL tested system is available through a manufacturer, a manufacturer's engineering judgment derived from similar UL system designs or other tests will be submitted to local authorities having jurisdiction for their review and approval prior to installation. Engineering judgment drawings must follow requirements set forth by the International Firestop Council.

1.6 SUBMITTALS

- A. Submit in compliance with Division 1.
 - Shop Drawings
 - a. Submit complete list of all firestop systems and materials to be utilized, including documentation of UL or FM classifications or approved third party testing. Include all of the individual materials required for each complete system. Indicate manufacturer's product name and number for each material.
 - b. Submit drawings of through-penetrations or construction joints, which indicates the firestop system to be utilized for each different firestopping application. Drawing shall indicate construction of wall or floor assembly; size, number and material of penetrating items; firestop systems designation; required F-rating, T-rating and remarks.
 - c. For installations or configurations not covered by UL or FM design number, a recommendation shall be obtained from the Manufacturer, in writing, for the specific application, signed by a certified engineer.

2. Product Data

- a. Submit copies of manufacturer's product data, Material Safety Data Sheets, specifications, recommendations, standard details and installations instructions for all firestop assemblies.
- b. Manufacturer's engineering judgment identification number and drawing details when no UL system is available for an application. Engineering judgment must include both project name and contractor's name who will install firestop system as described in drawing.
- c. Submit safety data sheets provided with products delivered to jobsite, as required by the Contractor as per OSHA GHS/Hazard Communication Standard.
- B. Installation Responsibility: assign installation of through-penetration firestop systems and fireresistive joint systems in Project to a single sole source firestop specialty contractor.
- C. Engage an experienced Installer who is certified, licensed, or otherwise qualified by the firestopping/sealing manufacturer as having been provided the necessary training to install manufacturer's products per specified requirements.
 - 1. A manufacturer's willingness to sell its firestopping products to the Contractor or to an Installer engaged by the Contractor does not in itself confer qualifications on the buyer.
 - 2. The work is to be installed by a Contractor/Installer with at least one of the following qualifications:
 - 3. Firestopping 'Manufacturer's' Approved or Accredited Fire Stop 'Specialty' Contractor
 - 4. Hilti Accredited Fire Stop Specialty Contractor
- D. Submit Statement of Contractor Qualifications.
 - 1. Include the Contractor/Installer's qualification as defined above.
 - 2. Include the Work Scope for the Contractor/Installer
 - 3. Include past projects of comparable scale projects or using similar systems indicating required experience for this project.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials undamaged to project site in manufacturer's original packaging, clearly labeled, unopened containers, clearly identified with brand, type, and UL label where applicable.
- B. Coordinate delivery of materials with scheduled installation date to allow minimum storage time at jobsite.
- C. Store materials under cover and protect from weather and damage in compliance with manufacturer's requirements, including temperature limitations
- D. Handle firestop materials in a manner providing protection from damage and exposure to the elements, in accordance with manufacturer's instructions.
- E. Comply with recommended procedures, precautions or remedies described in material safety data sheets as applicable.
- F. Material Safety Data Sheets (MSDS) will be provided on the job site for all materials. Following manufacturer's guidelines for use, handling and disposal.

1.8 WARRANTY

- A. Provide all firestop and fire safing materials warranted, in writing, by the manufacturer against defects in manufacturing and materials.
- B. Completed installation shall be warranted, in writing, by the installer against defects in workmanship.

1.9 PROJECT CONDITIONS

- A. Do not use materials that contain flammable solvents.
- B. Existing Conditions:
 - 1. Conform to Manufacturer's printed instructions for installation.
 - 2. Verify existing conditions and substrates before starting work. Correct unsatisfactory conditions before proceeding
 - 3. Proceed with installation only after penetrations of the substrate have been installed.
 - 4. Weather Conditions: Do not proceed with installation of firestop materials when temperatures exceed the manufacturer's recommended limitations for installation printed on product label and product data sheet. Also do not proceed with installation of firestop materials when temperature falls below 40° F.

C. Environmental Requirements:

- 1. Furnish adequate ventilation.
- 2. During installation protect surrounding area to prevent contamination of adjacent surfaces by firestopping materials. Provide masking and drop cloths to prevent firestopping materials from contaminating any adjacent surfaces
- 3. Comply with manufacturer's recommendations for temperature and humidity conditions before, during and after installation of firestopping.
- 4. Firestop materials used shall not require solvent- based chemicals for clean-up purposes.
- 5. Products allowing silicons/silicas to become airborne before or during a fire shall not be used when electronic switching devices or painting operations are located within the same building.

D. Scheduling

Schedule installation of cast-in place firestop devices after completion of floor formwork, metal form deck, or composite deck but before placement of concrete. Schedule installation of firestop sleeves and smoke & acoustic sleeves before openings are made and cables are run.

E. Schedule installation of other firestopping materials after completion of penetrating item installation but prior to covering or concealing of openings

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS

- A. Provide firestopping materials and systems meeting the requirements specified herein.
 - 1. Design and install all firestop products and systems so that the system will allow full restoration of the thermal and fire resistance properties of the assembly being penetrated with minimal repair if penetrants are subsequently removed or added.
 - 2. Protect penetrations containing loose electrical, data or communications cabling using firestopping products that allow unrestricted cable changes without damage to seal.
 - 3. Firestopping materials and systems must be intumescent or capable of filling throughopenings created by the burning or melting of combustible pipes, pipe insulation materials or cable jacketing and the deflection of sheet metal due to thermal expansion.
 - 4. Firestop sealants must be elastomeric or flexible to allow for normal pipe movement
 - 5. All products used shall be water-resistant after drying or curing and shall be unaffected by high humidity, condensation or transient water exposure.
 - 6. Provide materials with a maximum flame spread of 25 and smoke development of 50 when tested in accordance with ASTM E 84.
 - 7. Provide materials with a minimum of one year shelf life.
 - 8. Materials shall not affect or de-rate the properties of cables in energized cable applications.
 - 9. Supply materials compatible with materials used in building construction.
 - 10. Firestop materials must not shrink upon curing.
 - 11. Firestop materials must be moisture-resistant and may not dissolve in water after curing.
 - 12. All materials shall be asbestos free and non-carcinogenic. Materials should meet the requirements for use in a "Green Building" as defined by the US Green Building Council and the ASTM Green Building Sub-Committee E 50.06.
 - 13. Firestop materials shall not contain flammable or toxic solvents and shall not produce toxic or flammable outgassing during the drying or curing process.
 - 14. Water-based, non-toxic firestop materials shall be used in lieu of silicone or solvent based materials.
 - 15. Penetrations in Fire Resistance Rated Walls: Provide firestopping with ratings determined in accordance with UL 1479 or ASTM E 814.
 - a. F-Rating: Not less than the fire-resistance rating of the wall construction being penetrated
 - 16. Penetrations in Horizontal Assemblies: Provide firestopping with ratings determined in accordance with UL 1479 or ASTM E 814.
 - a. F-Rating: Minimum of 1-hour rating, but not less than the fire-resistance rating of the floor construction being penetrated.
 - b. T-Rating: when penetrant is located outside of a wall cavity, minimum of 1-hour rating, but not less than the fire-resistance rating of the floor construction being penetrated.
 - 17. Penetrations in Smoke Barriers: Provide firestopping with ratings determined in accordance with UL 1479 or ASTM E 814.
 - a. L-Rating: Not exceeding 5.0 cfm/sq. ft. of penetration opening at both ambient and elevated temperatures
 - 18. Mold Resistance: Provide penetration firestopping with mold and mildew resistance rating less than or equal to 01 as determined by ASTM G21.

- 19. Rain and water resistance: provide perimeter joint sealant with tack-free time (ASTM C 697) capable of meeting ASTM D6904 standard for wind driven rain resistance.
- 20. Firestopping Materials are either "cast-in-place" (integral with concrete placement) or "post installed." Provide cast-in-place firestop devices prior to concrete placement.

2.2 GENERAL REQUIREMENTS COMMUNICATIONS SYSTEMS

- 1. Provide firestopping and sealing materials composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by the firestopping manufacturer based on testing and field experience.
- 2. Provide components for each firestopping system that are needed to install fill material. Use only components specified by the firestopping manufacturer and approved by the qualified testing agency for the designated fire-resistance-rated systems.
- 3. Provide a round fire-rated cable management device whenever cables penetrate fire rated walls, where frequent cable additions and changes may occur. The fire-rated cable management device of approximately 12 inches in length, shall consist of a corrugated steel tube with zinc coating, contain and inner plastic housing, intumescent material rings, and inner fabric smoke seal membrane. The fire-rated cable management device shall contain integrated intumescent firestop wrap strip materials sufficient to maintain the hourly rating of the barrier being penetrated. The fire-rated cable management device shall contain a smoke seal fabric membrane or intumescent firestop plugs sufficient to achieve the L-Rating requirements of the barrier type.
- 4. Provide a round cable management device whenever cables or cable bundles penetrate **non-fire** rated construction (e.g. smoke partition) where frequent cable additions and changes may occur. The manufacturer shall furnish independent test reports documenting the in-use sound transmission class (STC) characteristics of the non-fire rated assembly as tested per ASTM E 90. The test report shall provide the STC ratings of the assembly while the device is in use, with a minimum of two additional data points other than 0% and 100% visual fill.
- 5. Provide non-curing, re-penetrable, intumescent firestop blocks around communication cable trays or ladder racks penetrating through fire rated walls. The firestop system assembly shall be accessible from one side of the wall. The firestop material shall allow up to 10 inches of unreinforced annular space.
- 6. Provide a non-curing, self-adhesive, surface mounted cable disc for single cables and cable bundles up to one inch (1") diameter in membrane and through penetration assemblies as tested in accordance with UL 1479 or ASTM E 814.
- 7. Penetrations in Fire Resistance Rated Walls: Provide firestopping with ratings determined in accordance with UL 1479 or ASTM E 814.
 - F-Rating: Not less than the fire-resistance rating of the wall construction being penetrated
- 8. Penetrations in Horizontal Assemblies: Provide firestopping with ratings determined in accordance with UL 1479 or ASTM E 814.
 - a. F-Rating: Minimum of 1-hour rating, but not less than the fire-resistance rating of the floor construction being penetrated.
 - b. T-Rating: when penetrant is located outside of a wall cavity, minimum of 1-hour rating, but not less than the fire-resistance rating of the floor construction being penetrated.
- 9. Penetrations in Smoke Barriers: Provide firestopping with ratings determined in accordance with UL 1479 or ASTM E 814.
 - a. L-Rating: Not exceeding 5.0 cfm/sq. ft. of penetration opening at both ambient and elevated temperatures

- 10. Mold Resistance: Provide penetration firestopping with mold and mildew resistance rating less than or equal to 01 as determined by ASTM G21.
- 11. Rain and water resistance: provide perimeter joint sealant with a tack-free time (ASTM C 697) capable of meeting ASTM D6904 standard for wind driven rain resistance.

2.3 THROUGH-PENETRATION FIRESTOPPING OF FIRE-RATED CONSTRUCTION

- A. Through-penetration firestop product(s) tested to ASTM E814 listed in the UL Fire Resistance Directory in which it is classified as a fill, void or cavity material or a firestop device. This should be classified for approval with the particular type of penetrating item and the wall or floor assembly that the item is penetrating in order to maintain the integrity required.
 - 1. All firestopping products must be from a single manufacturer.

2.4 CONSTRUCTION GAP AND JOINT FIRESTOPPING OF FIRE-RATED CONSTRUCTION

- A. Identify the gap/joint to be sealed as a dynamic (movement) or static (no movement) system. Products used for dynamic joints must be tested to and passed UL 2079, Standard for Fire Tests of Joints.
- B. Joints should be classified as: Floor to Floor, Wall to Wall, Floor to Wall or Top of Wall.
- Firestopping between construction gaps or joints for concrete slabs/floors or concrete block/CMU walls.
- D. Firestopping between construction gaps or joints for top of gypsum wallboard partitions to the underside of a concrete slab or concrete filled fluted deck.
- E. Firestopping between construction gaps or joints for top of gypsum wall board partitions to underside of fluted metal roof deck or concrete filled fluted metal floor deck.
- F. Firestopping of control and expansion joints in a fire rated CMU partition and curtain walls.
- G. All firestopping products must be from a single manufacturer.

2.5 ACCESSORIES

- A. Fill, void or cavity materials: As approved in the UL Fire Resistance Directory or Factory Mutual Approval Guide.
- B. Forming materials: As approved in the UL Fire Resistance Directory or Factory Mutual Approval Guide.

2.6 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with through penetration firestop systems (XHEZ) listed in Volume II of the UL Fire Resistance Directory, provide products of the following manufacturers as identified below:
 - 1. W. R. Grace "Flamesafe", 1330 Industry Rd., Hatfield, PA (800-334-8796)
 - 2. 3M Fire Protection Products, St Paul, Minnesota
 - 3. Hilti Inc., Plano, TX, 800-879-8000, www.us.hilti.com

2.7 MATERIALS

- A. Intumescent Firestop Sealants
 - 1. FlameSafe® FS 1900 Intumescent Elastomeric Sealant

- 2. 3M Fire Barrier Caulk CP25WB+
- B. Endothermic Water-Based Sealants
 - 1. FlameSafe® FS 900 Endothermic Sealant
 - 2. 3M Interam FireDam 150 Caulk
- C. Elastomeric Firestop Coating
 - 1. FlameSafe® FS2900 Intumescent Elastomeric Firestop Coating
 - 2. 3M FireDam Spray
- D. Intumescent Firestop Putty
 - 1. FlameSafe® FSP 1000 Intumescent Putty
 - 2. 3M Fire Barrier Moldable Putty+
- E. Firestop Mortar
 - FlameSafe® Mortar Seal
 - 2. 3M Fire Barrier Mortar
- F. Firestop Sleeves
 - 1. FlameSafe® Intumescent Sleeve
- G. Wrap Strips
 - 1. FlameSafe® Intumescent Wrap Strip
 - 2. 3M Fire Barrier FS-195+ Wrap/Strip
- H. Restraining Collars
 - 1. FlameSafe® FSRC 100/ FSRC 150 Restraining Collars
 - 2. 3M Fire Barrrier RC-1 Restricting Collar
- I. Composite Sheet
 - 1. 3M Fire Barrier CS-195+ Composite Sheet
- J. Accessories
 - 1. Forming or Damming Materials as specified by the manufacturer.
- 2.8 RE-PENETRABLE, ROUND CABLE MANAGEMENT DEVICES: for use with new or existing cable bundles penetrating gypsum or masonry walls, the following products are acceptable:
 - A. Hilti Speed Sleeve (CP 653) with integrated smoke seal fabric membrane.
 - B. Similar products by FlameSafe or 3M Fire Barrier

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine adjoining construction and the conditions under which the work is to be completed. Do not proceed with work until any unsatisfactory conditions detrimental to the proper and timely completion of the work have been corrected.
- B. Verify adjacent materials are clean, dry and ready to receive installation.

- C. Verify that openings and items (penetrations) passing through them are ready to receive the work of this section.
- D. Verify that field dimensions are as shown on the drawings and as recommended by the manufacturer.

3.2 PREPARATION

- A. Verification of Conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion. Do not proceed until unsatisfactory conditions have been corrected.
- B. Verify penetrations are properly sized and in suitable condition for application of materials.
- C. In accordance with manufacturer's requirements for proper installation, remove any incompatible materials (dirt, debris, greases, oils and solvents) which may inhibit the adhesion or physical properties of the firestop products.
- D. Beginning of installation means acceptance of existing conditions.
- E. Comply with manufacturer's recommendations for temperature and humidity conditions before, during and after installation of firestopping/sealing products

3.3 INSTALLATION

- A. Coordinate construction of openings, penetrations and construction joints to ensure that the fire stop systems are installed according to specified requirements.
- B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration fire stop systems. Coordinate construction and sizing of joints to ensure that fire-resistive joint systems are installed according to specified requirements.
- C. Coordinate fire stopping with other trades so that obstructions are not placed in the way prior to the installation of the fire stop systems.
- D. Do not cover up through-penetration fire stop and joint system installations that will become concealed behind other construction until each installation has been examined by the building inspector

3.4 INSTALLATION

- A. Coordinate with fire protection and other trades to assure that all pipe, conduit, cable and other items which penetrate fire rated and/or smoke wall construction have been permanently installed prior to installation of firestops and smoke seals. Schedule and sequence work to assure that partitions and other construction that would conceal penetrations are not erected prior to the installation of firestop, firesafing and smoke seals.
- B. Firestop System installation must meet requirements of ASTM E 814 or UL 1479 tested assemblies that provide a fire rating equal to that of the construction being penetrated
- C. Apply firestops and smoke seals at all locations as required by national, municipal and local governing laws and codes, per approved submittals referenced above.
- D. Apply firestopping materials only when the temperature of the surfaces to be filled and the surrounding air temperature complies with the manufacturer's printed instructions.
- E. Comply with manufacturer's instructions for installation of through-penetration materials.
- F. Personal safety gear shall be utilized in accordance with manufacturer's instructions, material and environmental considerations.

G. For applications not covered by the literature or installation guide/drawing. Call the manufacturer's technical service engineer for assistance.

3.5 FIELD QUALITY CONTROL

- A. Verify that system(s) are installed in all specified and/or indicated locations in rated assemblies.
- B. Verify that proper, specified firestopping materials are used in the firestop system and that system is installed in strict accordance with the latest independent testing agency or manufacturer's latest published requirements.
- C. Where system design permits, remove damming or support materials only after it has been determined that the firestop materials have fully cured or dried.
- D. Install any covering materials or finish as per design requirements and manufacturer's instructions.
- E. Perform under this section patching and repairing of firestopping caused by cutting or penetrating of existing firestop systems already installed by other trades.
- F. Inspection of through-penetration firestopping and sealing shall be performed in accordance with ASTM E 2174, "Standard Practice for On-Site Inspection of Installed Fire Stops" or other recognized standards.
- G. Do not proceed to enclose firestopping with other construction until applicable code building inspectors, including fire department inspectors, have inspected the work and given approval to close the work.
- H. Where necessary, repairs shall be made, and repaired installations shall be re-inspected.
- I. Protect materials from damage on surfaces subject to traffic.

3.6 INDENTIFICATION & DOCUMENTATION

- A. After installation, properly identify all firestop systems. Identification shall occur at location where system has been installed and shall include:
 - 1. Identify the firestopping system that has been installed as being a "Rated Through-Penetration Firestop System - Do Not Disturb."
 - 2. Use label minimum 3" x 5", yellow and black OSHA colors with manufacturers; and building owner representative and/or contractor clearly identified.
- B. The firestop contractor is to supply documentation for each single application addressed. This documentation is to identify each penetration and joint location on the entire project. Documentation to include through penetration and construction joints. Provide documentation in line and coordinated with the manufacturer's specifications for Identification & Documentation forms.
- C. Copies of these documents are to be provided to the general contractor at the completion of the project.
- D. Identify through-penetration firestop systems with pressure-sensitive, self-adhesive, preprinted vinyl labels. Attach labels permanently to surfaces of penetrated construction on both sides of each firestop system installation where labels will be visible to anyone seeking to remove penetrating items or firestop systems. Include the following information on labels:
 - 1. The words: "Warning -Through Penetration Firestop System-Do Not Disturb. Notify Building Management of Any Damage."
 - 2. Contractor's Name, address, and phone number.

- 3. Through-Penetration firestop system designation of applicable testing and inspecting agency.
- 4. Date of Installation.
- 5. Through-Penetration firestop system manufacturer's name.
- 6. Installer's Name.
- 7. Labels shall have a unique QR code for each penetration which can be scanned by firestop documentation software to quickly identify the penetration attributes.

3.7 CLEAN-UP

- A. Remove excess firestopping materials from surfaces not required to be firestopped.
- B. Clean all surfaces adjacent to sealed holes and joints to be free of excess firestop materials and soiling as work progresses.
- C. Clean application equipment in water immediately after use.

END OF SECTION 07 84 00

SECTION 07 92 00 - JOINT SEALANTS

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.
- B. As indicated in previous Sections of the Project Manual.

1.2 SUMMARY

- A. Section Includes: The extent of each type of joint sealer is indicated. Provide "sealant" for all exterior joints, certain indicated interior joints, and where "mastic" is indicated. Provide "calking" at all remaining interior joints.
- B. The required applications include, but are not limited to the following:
 - Exterior building wall joints.
 - 2. Miscellaneous masonry construction joints.
 - 3. Sealant between floor and plumbing fixtures.
 - 4. Partition and ceiling joints.
 - 5. Joints at openings and indicated frames or subframes.
 - 6. Equipment and isolation joints.

1.3 PRE-INSTALLATION MEETING:

- A. Pre-Installation Meeting: Meet at the project well in advance of the time scheduled for work, (a minimum of one week), and review requirements for the work and conditions which could possibly interfere with successful performance of the work. Require all parties concerned with the work, or required to coordinate with it, or to protect it thereafter, to attend the meeting, including:
 - 1. Owner or Representative
 - 2. General Contractor
 - Installer
 - 4. Manufacturer(s) Representatives
 - Architect

1.4 QUALITY ASSURANCE:

A. At the Owner's option, testing of depth of joint material may be undertaken to ensure compliance with the specification and conformance to manufacturer's specifications and recommendations for joint design. If the joint fails to comply with design requirements, the Contractor shall pay for the cost of testing and replacement of all affected joints.

1.5 SUBMITTALS:

A. Product Data:

 For information only, submit copies of the manufacturer's specifications, recommendations and installation instructions for each type of material required. Include manufacturer's published data, or letter of certification, or certified test laboratory report indicating that each material complies with the requirements and is intended generally for the applications shown.

B. Samples:

Submit samples of each color required (except black) for each type of joint sealer exposed to view. Install sample between two strips of material similar to or representative of typical surfaces where sealer will be used, held apart to represent typical joint widths. Samples will be reviewed for color and texture only. Compliance with all other requirements is the exclusive responsibility of the Contractor.

C. Guarantee:

- Submit copies of written two-year guarantee agreeing to repair or replace joint sealers which fail to perform as air-tight and water-tight joints; or fail in joint adhesion, cohesion, abrasion resistance, weather resistance, extrusion resistance, migration resistance, stain resistance, or general durability; or appear to deteriorate in any other manner not clearly specified by submitted manufacturer's data as an inherent quality of the material for the exposure indicated.
 - a. Provide a guarantee signed by the Installer and Contractor.

1.6 JOB CONDITIONS:

- A. Examine the joint surfaces and backing, and their anchorage to the structure, and the conditions under which the joint sealer work is to be performed. Do not proceed with the joint sealer work until unsatisfactory conditions have been corrected.
- B. Weather Conditions: Do not proceed with installation of sealants under adverse weather conditions, or when temperatures are below or above manufacturer's recommended limitations for installation. Proceed with the work only when weather conditions are favorable for proper cure and development of high early bond strength. Where joint width is affected by ambient temperature variations, install elastomeric sealants when temperatures are in the lower third of manufacturer's recommended installation temperature range.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL:

- A. Colors: For exposed materials provide color as indicated or, if not indicated, as selected from manufacturer's standard colors. For concealed materials, provide the natural color which has the best overall performance characteristics.
- B. Hardness: As recommended by manufacturer for application shown.
- C. Modulus of Elasticity: Provide the lowest available modulus of elasticity, which is consistent with exposure to weathering, indentation, vandalism, abrasion, support of loading, and other requirements.
- D. Compatibility: Before purchase of each required material, confirm its compatibility with each material it will be exposed to in the joint system.

- E. Size and Shape: As shown or, if not shown, as recommended by the manufacturer for the type and condition of joint, and for the indicated joint performance or movement.
- F. Grade of Sealant: For each application, provide the grade of sealant (non-sag, self-leveling, no-track, knife grade, preformed, etc.) recommended by the manufacturer for the particular condition of installation (location, joint shape, ambient temperature, and similar conditions), to achieve the best possible overall performance. Grades specified herein are for normal conditions of installation.
- 2.2 SEALANTS (See Sealant Schedule at end of Section for specific use of sealants.)

A. Urethanes:

- Type "A1":Two-Part Urethane: Self-Leveling, ASTM C920, Type M, Grade P, Class 25. (Fed. Spec. TT-S-00227E Type I, Class A.)
 - Chem-Calk CC-550, by Bostik.
 - b. Vulkem 245, by Tremco.
 - c. Vulkem 255, Wide-Joint, by Tremco.
 - d. NR-200 Urexpan, by Pecora Corporation.
 - e. Sikaflex-2c NS/SL, by Sika Corporation.
 - f. SL-2, by Sonneborn
- 2. Type "A2":Two-Part Urethane: Non-Sag, ASTM C920, Type M, Grade NS, Class 25. (Fed. Spec. TT-S-00227E Type II, Class A.)
 - a. Chem-Calk 500, by Bostik.
 - b. Vulkem 227, by Tremco.
 - c. Dynatrol II, by Pecora Corporation.
 - d. Sikaflex-2c NS/SL, by Sika Corporation.
 - e. Sonolastic NP 2, by Sonneborn Building Products, ChemRex Inc.
 - f. Dymeric, by Tremco
- 3. Type "A3":One-Part Urethane: Self-Leveling, ASTM C920, Type S, Grade P, Class 25. (Fed. Spec. TT-S-00230C Type I, Class A.)
 - a. Vulkem 45, by Tremco.
 - b. Urexpan NR-201, by Pecora Corporation.
 - c. Sonolastic SL1, by Sonneborn Building Products, ChemRex Inc.
- 4. Type "A4":One-Part Urethane: Non-Sag, ASTM C920, Type S, Grade NS, Class 25. (Fed. Spec. TT-S-00230C Type II, Class A.)
 - a. Chem-Calk 900, by Bostik.
 - b. Vulkem 116, by Tremco.
 - c. Sonolastic NP I, by Sonneborn Building Products, ChemRex Inc.
 - d. Dymonic, by Tremco.

B. Silicones:

- 1. Type "B1":One-Part Silicones: ASTM C920, Type S, Grade NS, Class 25. Vertical Surfaces Only.
 - a. 795 Silicone Structural Glazing, Glazing, and Weatherproofing Sealant, by Dow Corning.
 - b. 864 Architectural Silicone, by Pecora Corporation.
 - c. Sonolastic 150 Silyl Terminated polyether, by Sonneborn
 - d. Spectrem 3, by Tremco.
- 2. Type "B2":One-Part Silicones: ASTM C920, Type S, Grade NS, Class 25. Vertical Surfaces Only.
 - a. 795 Silicone Structural Glazing, Glazing, and Weatherproofing Sealant, by Dow Corning. (colors only)
 - b. 999-A, Dow Corning.
 - c. Construction 1200 Sealant, General Electric Company.
 - d. Sonolastic 150 Silyl Terminated polyether, by Sonneborn (Not for wet glazing)

- e. Spectrem 2, by Tremco.
- 3. Type "B3":One-Part Silicones: ASTM C920, Type S, Grade NS, Class 25. Vertical Surfaces Only.
 - a. 795 Silicone Structural Glazing, Glazing, and Weatherproofing Sealant, by Dow Corning. (colors only)
 - b. Construction 1200 Sealant, General Electric Company.
 - c. 999-A, Dow Corning.
 - d. 864 Architectural Silicone, by Pecora Corporation. (colors only)
 - e. Sonolastic 150 Silyl Terminated polyether, by Sonneborn
 - f. Spectrem 1, by Tremco.
- 4. Type "B4": One-Part Silicones: ASTM C920, Type S, Grade NS, Class 25.
 - a. 786 Mildew Resistant Silicone Sealant, Dow Corning.
 - b. SCS 1700 Sanitary Sealant, General Electric.
 - c. 898 Silicone Sanitary Sealant, Pecora Corporation.
 - d. Omniseal or Omniplus (Sanitary applications), by Sonneborn
 - e. Tremsil, by Tremco.
- C. Acrylics, Latex: (For interior use only.)
 - 1. Type "C1": One-Part Acrylic Latex, Non-Sag, ASTM-C-834-76.
 - a. Chem-Calk 600, by Bostik.
 - b. LC-130, by MACCO Adhesives, The Glidden Company.
 - c. Easa-ply ALS, by W. R. Meadows, Inc.
 - d. AC-20+Silicone Acrylic Latex, by Pecora Corporation.
 - e. Sonolac, Sonneborn Building Products, ChemRex Inc.
- D. Acoustical Sealants:
 - 1. Type "D1":
 - a. AC-20 FTR Acoustical and Insulation Sealant, by Pecora Corporation.
 - b. 60+ Unicrylic, by Pecora Corporation.
 - c. Sheetrock Acoustical Sealant, by United States Gypsum.
- E. Butyls:
 - 1. Type "E1": One-Part Butyl, Non-Sag, FS TT-S-1657.
 - a. Chem-Calk 300, by Bostik.
 - b. BC-158 Butyl Rubber, by Pecora Corporation. (ASTM C1085)
- F. Preformed Compressible & Non-Compressible Fillers:
 - 1. Type "F1": Backer Rod Closed cell polyethylene foam:
 - a. HBR Backer Rod, by Nomaco.
 - b. #92 Greenrod, by Nomaco.
 - c. Sonolastic Closed-Cell Backer Rod, Sonneborn Building Products, ChemRex Inc.
 - d. Soft Cell Backer Rod (Non-gassing), by Sonneborn.
 - 2. Type "F2": Backer Rod Open cell polyurethane foam:
 - a. Denver Foam, by Backer Rod Mfg. Inc.
 - b. Foam Pack II, by Nomaco.
 - 3. Type "F3": Neoprene compression seals:
 - a. WE, WF, and WG Series, by Watson Bowman & Acme Corp.
 - Will-Seal 150 Pre-compressed Expanding Foam Sealants, by Will-Seal, a Division of Illbruck.
 - 4. Type "F4": Butyl Rod:
 - a. Kirkhill Rubber Co. (714)529-4901.
 - 5. Type "G1":
 - a. Bond Breaker Tape: Polyethylene tape of plastic as recommended by sealant manufacturer, to be applied to sealant-contact surfaces where bond to substrate of joint filler must be avoided for proper performance of sealant.

- G. Epoxy:
 - Type "G2":
 - a. Bonstone

2.3 MISCELLANEOUS ACCESSORIES:

- A. Joint Primer/Sealer: Provide the type of joint primer/sealer recommended by the sealant manufacturer for the joint surfaces to be primed or sealed.
- B. Bond Breaker Tape: Polyethylene tape or other plastic tape recommended by the sealant manufacturer to be applied to sealant-contact surfaces where bond to the substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape where applicable.
- C. Sealant Backer Rod: Compressible rod stock of polyethylene foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam; or other flexible, permanent, durable non-absorptive material as recommended by the sealant manufacturer.

PART 3 - EXECUTION

3.1 Manufacturer's Instructions:

 Comply with manufacturer's printed instructions except where more stringent requirements are shown or specified, and except where manufacturer's technical representative directs otherwise.

B. Joint Preparation:

- Clean joint surfaces immediately before installation of sealant or calking compound. Remove dirt, insecure coatings, moisture and other substances which would interfere with bond of sealant or calking compound. Etch concrete and masonry joint surfaces and roughen vitreous or glazed joint surfaces as recommended by sealant manufacturer.
- 2. Prime or seal the joint surfaces, where recommended by the sealant manufacturer. Do not allow primer/sealer to spill or migrate onto adjoining surfaces.

3.2 INSTALLATION:

- A. Set joint filler units at proper depth or position in the joint to coordinate with other work, including the installation of bond breakers, backer rods and sealants. Do not leave voids or gaps between the ends of joint filler units.
- B. Install sealant backer rod for liquid elastomeric sealants, except where shown to be omitted or recommended to be omitted by sealant manufacturer for the application shown.
- C. Install bond breaker tape where required by manufacturer's recommendations to ensure that elastomeric sealants will perform properly.
- D. Employ only proven installation techniques, which will ensure that sealants will be deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of the joint bond surfaces equally on opposite sides. Fill the sealant rabbet to a slightly concave surface, between a horizontal surface and vertical surface, fill joint to form a slight cove, so that joint will not trap moisture and dirt.

- E. Install sealants to depths recommended by the sealant manufacturer but within the following general limitations, measured at the center (thin) section of the bead:
 - 1. For sidewalks, pavements and similar joints sealed with elastomeric sealants and subject to traffic and other abrasion and indentation exposures, fill joints to a depth equal to 75% of joint width, but neither more than 5/8" deep nor less than 3/8" deep.
 - 2. For normal moving joints sealed with elastomeric sealants but not subject to traffic, fill joints to a depth equal to 50% of joint width, but neither more than 1/2" deep nor less than 1/4" deep.
 - 3. For joints sealed with non-elastomeric sealants and calking compounds, fill joints to a depth in the range of 75% to 125% of joint width.
 - 4. Spillage: Do not allow sealants or compounds to overflow or spill onto adjoining surfaces, or to migrate into the voids of adjoining surfaces. Clean the adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage.
 - 5. Do not overheat hot-applied sealants.
 - 6. Recess exposed edges of joint fillers slightly behind adjoining surfaces, so compressed units will not protrude from the joint.

3.3 CURE AND PROTECTION:

A. Cure sealants and calking compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability. Advise the Contractor of procedures required for the cure and protection of joint sealers during the construction period, so that they will be without deterioration or damage (other than normal wear and weathering) at the time of acceptance.

3.4 SEALANT SCHEDULE

- A. Exterior Joints:
 - 1. Perimeters of exterior openings where frames and other penetrations meet exterior facade of building: precast concrete, brick, CMU, reinforced concrete.
 - Sealant Type A2
 - b. Sealant Type B1 (for prefinished materials only)
 - 2. Expansion and control joints in exterior surfaces of unit masonry walls.
 - a. Sealant Type A2
 - 3. Coping joints, coping-to-facade joints, cornice and wash, or horizontal surface joints not subject to foot or vehicular traffic.
 - a. Sealant Type A2
 - b. Sealant Type A4
 - Sealant Type B1 (for prefinished materials only)
 - 4. Exterior joints in horizontal wearing and non-wearing surfaces.
 - a. Sealant Type A1
 - b. Sealant Type A3
 - c. Backer Material Type F1
 - 5. Setting bed for threshold and saddles.
 - a. Sealant Type E1
 - 6. Painted metal lap or flashing joints.
 - a. Sealant Type B1
 - 7. Exterior Masonry cracks:
 - a. Sealant Type G2

B. Interior Joints:

- 1. Seal interior perimeters of exterior openings.
- 2. Expansion and control joints on interior of exterior cast-in-place concrete walls.
- 3. Expansion and control joints on interior of exterior surfaces of masonry walls.

- 4. The perimeters of the interior of hollow metal and aluminum frames.
- Interior masonry vertical control joints and intersecting masonry walls; CMU-to-CMU, CMU-to-concrete.
 - a. For all of the above interior joints:
 - 1) Sealant Type A2
 - 2) Sealant Type A4
 - 3) Sealant Type B1 (for prefinished materials only)
- 6. Exposed interior control joints in drywall and concealed joints.
 - a. Sealant Type C1
 - b. Sealant Type D1
- 7. Joints of underside of precast beams or planks.
 - a. Sealant Type A2
 - b. Sealant Type A4
- 8. Joints at tops of non-load bearing masonry walls at underside of cast-in-place concrete.
 - a. Sealant Type A2
 - b. Sealant Type A4
- 9. Perimeter of plumbing fixtures: sinks, urinals, water closets, basins, vanities, etc.
 - a. Sealant Type B4

C. Glazing:

- General Purpose Glazing.
 - a. Sealant Type B3
- 2. End Damming.
 - a. Sealant Type E1

END OF SECTION 07 90 00

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

PART 2 - GENERAL

2.1 RELATED DOCUMENTS

- A. Retain or delete this article in all Sections of Project Manual.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

2.2 SUMMARY

- A. Section Includes:
 - 1. Standard hollow metal door frames.
 - 2. Custom hollow metal frames for vision panels.
- B. Related Sections:
 - 1. Division 08 Section "Door Hardware" for door hardware for hollow metal doors.
 - 2. Division 08 Glass and Glazing.

2.3 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings.
- B. Standard Hollow Metal Work: Hollow metal work fabricated according to ANSI/SDI A250.8.
- C. Custom Hollow Metal Work: Hollow metal work fabricated according to ANSI/NAAMM-HMMA 861.

2.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, and finishes.
- B. Shop Drawings: Include the following:
 - 1. Elevations of each door design.
 - 2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
 - 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
 - 4. Locations of reinforcement and preparations for hardware.
 - 5. Details of each different wall opening condition.
 - 6. Details of anchorages, joints, field splices, and connections.
 - Details of accessories.
 - 8. Details of moldings, removable stops, and glazing.
 - 9. Details of conduit and preparations for power, signal, and control systems.
- C. Samples for Initial Selection: For units with factory-applied color finishes.
- D. Samples for Verification:
 - 1. For each type of exposed finish required, prepared on Samples of not less than 3 by 5 inches (75 by 125 mm).
- E. Other Action Submittals:
 - 1. Schedule: Provide a schedule of hollow metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with door hardware schedule.

2.5 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each type of hollow metal door and frame assembly.

2.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use non-vented plastic.
 - 1. Provide additional protection to prevent damage to the finish of factory-finished units.
- B. Temporary spreader bars are intended for shipping and handling purposes only.

- C. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- D. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch- (102-mm-) high wood blocking. Do not store in a manner that traps excess humidity.
 - 1. Provide minimum 1/4-inch (6-mm) space between each stacked door to permit air circulation.

2.7 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

2.8 COORDINATION

A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

PART 3 - PRODUCTS

3.1 MANUFACTURERS

- A. See Editing Instruction No. 1 in the Evaluations for cautions about naming manufacturers. See Division 01 Section "Product Requirements."
- B. Manufacturers: Subject to compliance with requirements, [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:
- C. Manufacturers listed below produce either standard or custom hollow metal work unless otherwise indicated. Verify specific capabilities with individual manufacturers.
 - 1. Amweld Building Products, LLC.
 - 2. Benchmark; a division of Therma-Tru Corporation.
 - 3. Ceco Door Products; an Assa Abloy Group company.
 - 4. Curries Company; an Assa Abloy Group company.
 - 5. Deansteel Manufacturing Company, Inc.
 - 6. Fleming Door Products Ltd.; an Assa Abloy Group company.

- 7. Habersham Metal Products Company.
- D. The manufacturer listed in first subparagraph below produces only custom hollow metal work.
 - 1. Karpen Steel Custom Doors & Frames.
 - 2. Kewanee Corporation (The).
 - 3. Mesker Door Inc.
 - 4. Pioneer Industries, Inc.
 - 5. Security Metal Products Corp.
 - 6. Steelcraft; an Ingersoll-Rand company.
 - 7. Windsor Republic Doors.

3.2 MATERIALS

- A. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum **A40 (ZF120)** metallic coating.
- C. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- D. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool with 6- to 12-lb/cu. ft. (96- to 192-kg/cu. m) density; with maximum flame-spread and smoke-development indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.
- E. Glazing: Comply with requirements in Division 08 Section "Glazing."

3.3 STANDARD HOLLOW METAL FRAMES

- A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.
- B. Face-welded frames are welded only along the face and not along the soffit, stops, and rabbets. Fully welded frames are completely welded along all elements.
- C. Interior Frames: Fabricated from cold-rolled steel sheet.
 - 1. Fabricate frames with mitered or coped corners.
 - 2. Frames for Wood Doors: 0.053-inch- (1.3-mm-) minimum thick steel sheet.

D. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcement plates from same material as frames.

3.4 CUSTOM HOLLOW METAL FRAMES

- A. General: Fabricate frames of construction indicated. Close contact edges of corner joints tight with faces mitered and stops butted or mitered. Continuously weld faces and soffits and finish faces smooth. Comply with ANSI/NAAMM-HMMA 861.
 - 1. Fabricate frames with mitered or coped corners.
 - 2. Frames for Vision Panels: 0.053-inch- (1.3-mm-) minimum thick steel sheet.
- B. Interior Frames: Fabricated from cold-rolled steel sheets.
- C. Hardware Reinforcement: Fabricate according to ANSI/NAAMM-HMMA 861 with reinforcing plates from same material as frame.
- D. Head Reinforcement: Provide minimum 0.093-inch- (2.3-mm-) thick, steel channel or angle stiffener for opening widths more than 48 inches (1219 mm).

3.5 FRAME ANCHORS

- A. Jamb Anchors:
 - 1. Stud-Wall Type: Designed to engage stud, welded to back of frames.
 - 2. Compression Type for Drywall Slip-on Frames: Adjustable compression anchors.

3.6 STOPS AND MOLDINGS

A. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch (16 mm) high unless otherwise indicated.

3.7 ACCESSORIES

A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

3.8 FABRICATION

A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

- B. Tolerances: Fabricate hollow metal work to tolerances indicated in [SDI 117] [ANSI/NAAMM-HMMA 861].
- C. Hollow Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
 - 1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
 - 2. Vision Panel and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
 - 3. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 - 4. Jamb Anchors: Provide number and spacing of anchors as follows:
- D. Fabricate concealed stiffeners, edge channels, and hardware reinforcement from either cold- or hot-rolled steel sheet.
 - 1. Locate hardware as indicated, or if not indicated, according to [ANSI/SDI A250.8] [ANSI/NAAMM-HMMA 861].
 - 2. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
 - 3. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.
- E. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.
 - 1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow metal work.
 - 2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
 - 3. Provide a fixed frame moldings on the outside of exterior and on secure side of interior doors and frames.
 - 4. Provide loose stops and moldings on the inside of hollow metal work.
 - Coordinate rabbet width between fixed and removable stops with type of glazing and type
 of installation indicated.
- 3.9 STEEL FINISHES

- A. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pretreating.
 - 1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.
- B. Factory-applied finishes are not covered by ANSI/NAAMM-HMMA 861.

PART 4 - EXECUTION

4.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

4.2 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Tolerances in first paragraph below are required by ANSI/NAAMM-HMMA 861.
- C. Prior to installation, adjust and securely brace welded hollow metal frames for squareness, alignment, twist, and plumbness to the following tolerances:
 - 1. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - 2. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
 - 3. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - 4. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a perpendicular line from head to floor.

4.3 INSTALLATION

- A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
- B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11 HMMA 840.
 - 1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 - a. Install frames with removable glazing stops located on secure side of opening.
 - b. Install door silencers in frames before grouting.
 - c. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - d. Check plumbness, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - e. Field apply bituminous coating to backs of frames that are filled with grout containing anti-freezing agents.
 - 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post installed expansion anchors.
 - a. Floor anchors may be set with powder-actuated fasteners instead of post installed expansion anchors if so indicated and approved on Shop Drawings.
 - 3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation behind frames.

C. Fastening:

- 1. In-Place Gypsum Board Partitions: Secure frames in place with post installed expansion anchors through floor anchors at each jamb. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
- Ceiling Struts: Extend struts vertically from top of frame at each jamb to overhead structural supports or substrates above frame unless frame is anchored to masonry or to other structural support at each jamb. Bend the top of struts to provide flush contact for securing to supporting construction. Provide adjustable wedged or bolted anchorage to frame jamb members.
- 3. Installation Tolerances: Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.

- c. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
- d. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.

4.4 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.
- B. Remove grout and other bonding material from hollow metal work immediately after installation.
- C. Retain one of two paragraphs below.
- D. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- E. Metallic-Coated Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION 081113

SECTION 08 21 10 - FLUSH WOOD DOORS

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. Solid-core doors with wood-veneer faces.
- B. Related Sections:
 - 1. Division 06 Section "Interior Architectural Woodwork" for requirements for veneers from the same flitches for both flush wood doors and wood paneling.
 - 2. Division 08 Section "Hollow Metal Doors & Frames".
 - 3. Division 08 Section "Glass and Glazing"

1.3 SUBMITTALS

- A. Product Data: For each type of door indicated. Include details of core and edge construction and trim for openings. Include factory-finishing specifications.
- B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.
 - Indicate dimensions and locations of mortises and holes for hardware.
 - 2. Indicate dimensions and locations of cutouts.
 - 3. Indicate requirements for veneer matching.
 - 4. Indicate doors to be factory finished and finish requirements.
 - 5. Indicate fire-protection ratings for fire-rated doors.
- C. Samples for Initial Selection: For factory-finished doors.
- D. Samples for Verification:
 - Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish. For each wood species and transparent finish, provide a set of three samples showing typical range of color and grain to be expected in the finished work
 - 2. Corner sections of doors, approximately 8 by 10 inches, with door faces and edges representing actual materials to be used.
 - a. Provide samples for each species of veneer and solid lumber required.
 - b. Provide samples for each color, texture, and pattern of plastic laminate required.
 - c. Finish veneer-faced door samples with same materials proposed for factory-finished doors.
 - 3. Frames for light openings, 6 inches long, for each material, type, and finish required.
- E. Warranty: Sample of special warranty.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer that is certified for chain of custody by an FSC-accredited certification body.
- B. Source Limitations: Obtain flush wood doors from single manufacturer.
- C. Quality Standard: In addition to requirements specified, comply with AWI's "Architectural Woodwork Quality Standards Illustrated.", WDMA I.S.1-A, "Architectural Wood Flush Doors." and WI's "Manual of Millwork."
 - 1. Provide AWI Quality Certification Labels or an AWI letter of licensing for Project indicating that doors comply with requirements of grades specified.
 - 2. Provide WI-Certified Compliance Certificate indicating that doors comply with requirements of grades specified.
 - 3. Provide WI-Certified Compliance Certificate for installation.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package doors individually in plastic bags or cardboard cartons.
- C. Mark each door on top and bottom rail with opening number used on Shop Drawings.

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
 - b. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.
 - 2. The warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
 - 3. Warranty Period for Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Algoma Hardwoods, Inc.
 - 2. Chappell Door Co.
 - 3. Eggers Industries.
 - 4. Graham
 - 5. Lambton Doors.
 - 6. Marshfield Door Systems, Inc.
 - 7. Mohawk Flush Doors, Inc.; a Masonite company.
 - 8. Oshkosh Architectural Door Company.
 - 9. Vancouver Door Company.

10. VT Industries Inc.

2.2 DOOR CONSTRUCTION, GENERAL

- A. WDMA I.S.1-A Performance Grade: Heavy Duty.
- B. Particleboard-Core Doors:
 - 1. Particleboard: ANSI A208.1, Grade LD-2.
 - 2. Blocking: Provide wood blocking in particleboard-core doors as follows:
 - a. 5-inch top-rail blocking, in doors indicated to have closers.

2.3 VENEERED-FACED DOORS FOR TRANSPARENT FINISH

- A. Interior Solid-Core Doors
 - 1. Grade: Premium, with Grade AA faces.
 - 2. Species: As indicated on drawings. If not indicated on drawings, provide Red Oak.
 - 3. Cut: Plain sliced (flat sliced).
 - 4. Match between Veneer Leaves: Book match.
 - 5. Assembly of Veneer Leaves on Door Faces: Balance match.
 - 6. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
 - 7. Room Match: Match door faces within each separate room or area of building. Corridor-door faces do not need to match where they are separated by 20 feet or more.
 - 8. Room Match: Provide door faces of compatible color and grain within each separate room or area of building.
 - 9. Core: Particleboard, Glued wood stave, or Structural composite lumber.
 - 10. Construction: Five plies. Stiles and rails are bonded to core, then entire unit abrasive planed before veneering. Faces are bonded to core using a hot press.
 - 11. WDMA I.S.1-A Performance Grade: Heavy Duty.

2.4 FABRICATION

- A. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
 - 1. Comply with requirements in NFPA 80 for fire-rated doors.
- B. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, DHI A115-W series standards, and hardware templates.
- C. Openings: Cut and trim openings through doors in factory.

2.5 FACTORY FINISHING

- A. Finish doors at factory.
- B. Transparent Finish:
 - 1. Grade: Premium.
 - 2. Finish: AWI TR-4 conversion varnish system.
 - 3. Staining: As selected by Architect from manufacturer's full range.

- 4. Effect: Filled finish.
- 5. Sheen: Satin.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and installed door frames before hanging doors.
 - 1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
 - 2. Reject doors with defects.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Hardware: For installation, see Division 08 Section "Door Hardware."
- B. Installation Instructions: Install doors to comply with manufacturer's written instructions and the referenced quality standard, and as indicated.
- C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 ADJUSTING

- A. Operation: Rehang or replace doors that do not swing or operate freely.
- B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 08 20 10

SECTION 08 41 00 - ALUMINUM ENTRANCES AND STOREFRONTS

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:
 - Entrance doors (exterior) with insulating glass.
 - 2. Frames and fixed glazing for interior doors or openings.

1.3 RELATED WORK SPECIFIED ELSEWHERE:

- A. Division 08 Section "Glass and Glazing".
- B. Division 07 Section "Insulation".
- C. Division 07 Section "Joint Sealers"
- D. Division 08 Section "Door Hardware".

1.4 QUALITY ASSURANCE:

- A. Standards: Comply with the requirements and recommendations in applicable specifications and standards by NAAMM, AAMA and AA, including the terminology definitions, and specifically including the "Entrance Manual" by NAAMM, except to the extent more stringent requirements are indicated.
- B. Manufacturer: Provide units produced by a firm with not less than five years of successful experience in the fabrication of aluminum entrance doors and frames, of the type required for this project.
 - Manufacturers offering aluminum frames and windows to comply with the requirements include:
 - a. Kawneer Company, Inc.
 - b. Old Castle/ Vista Wall
 - c. Pittco Architectural Metals.
 - d. Tubelite Div. of Conalco
 - e. US Aluminum.
 - f. YKK
 - g. DaVinci Windows

1.5 SUBMITTALS:

A. Manufacturers Data: For information only, submit copies of manufacturer's data, recommendations and standard details for aluminum doors and frames, including fabrication, finishing, hardware, accessories and other components of the work.

- B. Shop Drawings: Submit shop drawings for the fabrication and installation of aluminum doors and frames and associated components of the work. Include wall elevations at 1/2" scale, and half-size detail sections of every typical composite member. Show anchors, joint system, expansion provisions and other components not included in manufacturer's standard data. Include glazing details.
- C. Samples: Submit samples of each required aluminum finish, on 12" long extrusions or 6" square sheets of the alloys to be used for the work. Where normal color and texture variations are to be expected, include two or more units in each sample, to show the range of such variations. Samples will be reviewed for color and texture only. Compliance with other requirements is the exclusive responsibility of the Contractor.
- D. Guarantee: Submit copies of a written guarantee signed by the Manufacturer, Installer and Contractor, agreeing to replace aluminum doors and frames which fail in materials or workmanship within three years of the date of acceptance. Failure of materials or workmanship shall include (but not be limited to) failures in operation of doors and hardware, excessive leakage or air infiltration, excessive deflections, delamination of panels, deterioration of finish or metal in excess of normal weathering, and defects in accessories, weatherstripping, and other components of the work.

PART 2 - PRODUCTS

2.1 MATERIALS AND ACCESSORIES:

- A. Aluminum Extrusions: Provide alloy and temper as recommended by manufacturer for strength, corrosion resistance, application of required finish and control of color, but not less than 22,000 psi ultimate tensile strength. Provide main extrusions of not less than 0.125" wall thickness, except as otherwise indicated.
 - 1. Provide frame extrusions with minimum wall thickness of 0.188".
 - 2. Provide extruded glazing stops and other applied trim extrusions with minimum wall thickness of 0.062".
- B. Fasteners: Aluminum, non-magnetic stainless steel or other non-corrosive metal fasteners guaranteed by the manufacturer to be compatible with the doors, frames, stops, panels, hardware, anchors and other items being fastened. For exposed fasteners (if any), provide Phillips flat-head screws with finish matching the item fastened.
 - Do not use exposed fasteners except where unavoidable for the assembly of units, and unavoidable for the application of hardware. Provide only concealed screws in glazing stops.
- C. Steel Reinforcement and Brackets: Manufacturer's standard formed or fabricated steel units, of shapes, plates or bars; with 2.0 oz. hot-dip zinc coating complying with ASTM A 123, applied after fabrication.
- D. Inserts: For required anchorage into concrete or masonry work, furnish inserts of cast iron, malleable iron or 12 gage steel hot-dip galvanized after fabrication.
- E. Expansion Anchor Devices: Lead-shield or toothed-steel, drilled-in, expansion bolt anchors.

- F. Bituminous Coatings: Cold-applied asphalt mastic complying with SSPC-Paint 12, compounded for 30-mil thickness per coat.
- G. Compression Weatherstripping: Provide manufacturer's standard replaceable stripping of either molded neoprene gaskets complying with ASTM D 2000, Designation 2BC4a5 to 3BC620, or molded PVC gaskets complying with ASTM D 2287. Compression gaskets include gaskets in bottom rails of doors (sill gaskets) and collapsible finger guards at pivot jambs as well as bumper-type gaskets at door stops and laps.
- H. Sliding Weatherstripping: Provide manufacturer's standard replaceable stripping of wool, polypropylene or nylon woven pile, with nylon fabric and aluminum strip backing, complying with AAMA 701.1. Sliding weatherstripping includes stripping at jamb rails, head rails and meeting rails, wherever there is no stop or lap to receive compression weatherstripping (wiping action as well as sliding action).
- I. Sealants and Gaskets: Provide sealants and gaskets in the fabrication, assembly and installation of the work, which are recommended and guaranteed by the manufacturer to remain permanently elastic, non-shrinking, non-migrating and weatherproof for the life of the building.
- J. Glazing Materials: Refer to 088000 and 088853 sections for gaskets and sealants required for the installation of glass and "glazed" panels at the project site.
- K. Hardware (per leaf): (Color of all material to match doors and frames.)
 - 1. Hardware to be furnished and installed under this Section.
 - 2. Thresholds for exterior doors, complete with anchors and clips, coordinated with pivots and floor closers (if any) extruded aluminum, of size shown or, if not shown, of manufacturer's standard size but not less than 4" wide by 1/2" high.
- L. Cut, reinforce, drill and tap frames and doors as required to receive hardware, except do not drill and tap for surface-mounted items until the time of installation at the project site. Comply with hardware manufacturer's instructions and template requirements. Use concealed fasteners wherever possible.
- M. Install all hardware, except surface-mounted hardware, at the fabrication plant. Remove only as required for final finishing operations, and for delivery and installation of the work at the project site.

2.2 FABRICATION:

A. General:

- 1. Coordination of Fabrication: Where possible, check the actual frame or door openings in the construction work by accurate field measurement before fabrication, and show recorded measurements on final shop drawings. However, coordinate fabrication schedule with construction progress as directed by Contractor and avoid delays of the work. Where necessary, proceed with fabrication without field measurements, and coordinate installation tolerances to ensure proper fit of door and frame units.
- 2. Prefabrication: Except as otherwise indicated, provide each continuous unit of framework, doors, side lights, transom panels, hardware, and all accessory items, as a "packaged entrance" unit. Complete the fabrication, assembly, finishing, application of hardware and all other work, before shipment to the project site, to the greatest extent possible. Disassemble only to the extent necessary for shipment and installation.
- 3. Complete the cutting, fitting, forming, drilling and grinding of all metal work prior to cleaning, finishing, treatment and application of coatings. Remove arises from cut edges and ease edges and corners to a radius of approximately 1/64".
- 4. Weld by methods recommended by the manufacturer and AWS to avoid discoloration at welds. Grind exposed welds smoothly and restore mechanical finish.

- 5. Conceal fasteners, where possible, except as otherwise shown.
- 6. Maintain continuity of line and accurate relation of planes and angles. Provide secure attachment and support at mechanical joints, with hairline fit of contacting members.
- 7. Reinforce the work as necessary for performance requirements, and for support to the structure. Separate dissimilar metals with bituminous paint or preformed separators to prevent corrosion. Separate metal surfaces at moving joints with non-metallic separators to prevent "freeze-up" of joints.
- 8. Weatherstripping: Where exterior door stiles or head rails do not close against fixed stops equipped with compression weatherstripping, provide sliding weatherstripping, retained in an adjustable strip in a mortise centered in the edge of the door.
 - a. Provide heavy-duty, hollow, compression weatherstripping in the bottom-rail, adjustable for contact with the threshold.

B. Aluminum Frames:

- 1. Fabricate tubular and channel frame assemblies, as shown, with mitered or coped and structurally welded joints, reinforced to develop full strength and maximum rigidity in the framework.
- 2. Provide members of the size, shape and profile shown or, if not shown, provide manufacturer's standard frame members, but not less than 1-3/4" face width and 4.5" frame depth. Reinforce internally with steel channel shapes as shown, or as necessary to support the required loads.
 - Fabricate with intermediate horizontal rails forming a flush center panel to match that of the door.
- 3. Provide glazing system for frames to receive lights or panels. Design system for replacement of glass, but for non-removal of glass or panels from the exterior.
- 4. Fabricate frame assemblies for exterior walls with flashing and weeps to drain penetrating moisture to exterior. Provide anchorage and alignment brackets for concealed support of assembly from the building structure. Allow for thermal expansion of exterior units.
- 5. Coordinate with Section 130650 and match profiles provided therein.

2.3 ALUMINUM FINISHES:

A. General:

 Preparation: After fabrication of frames, prepare the aluminum surfaces for finishing in accordance with the aluminum producer's recommendations and standards of the finisher or processor. Process all components of each assembly simultaneously to attain complete uniformity of color.

B. Finish:

- Basis of Design:
 - a. Kawneer Permafluor™ (70% PVDF), AAMA 2605, Fluoropolymer Coating.

PART 3 - EXECUTION

3.1 INSTALLATION:

- A. Comply with manufacturer's specifications and recommendations for the installation of aluminum doors and frames.
- B. Do not install storefront framing until after the wall opening has been properly and completely flashed at the head, jamb and sill by other trades.

C. Set units plumb, level and true to line, without warp or rack of frames, doors or panels. Anchor securely in place. Separate aluminum and other corrodible metal surfaces from sources of corrosion or electrolytic action at points of contact with other materials. (Coat any surface of aluminum that comes in contact with masonry materials with heavy bodied bituminous coating.)

- D. Set sill members and other members in a bed of compound as shown, or with joint fillers or gaskets as shown to provide weathertight construction.
 - Refer to Division 7 for compounds, fillers and gaskets to be installed during installation of doors and frames.
 - 2. Refer to Division 7 for compounds, joint fillers and gaskets (if any) to be installed after installation of frame assemblies.
 - Install low-expansion polyurethane foam insulation around frame, concealed from view.
- E. Clean aluminum surfaces promptly after installation of frames and doors, exercise care to avoid damage of the protective coating (if any). Remove excess glazing and sealant compounds, dirt and other substances.
- F. Advise Contractor of protective treatment and other precautions required through the remainder of the construction period, to ensure that doors and frames will be without damage or deterioration (other than normal weathering) at the time of acceptance.

END OF SECTION 08 41 00

SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

A. Furnish and deliver all finish hardware necessary for all doors, also hardware as specified herein and as enumerated in hardware sets and as indicated and required by actual conditions at the building. The hardware shall include the furnishing of all necessary screws, bolts, expansion shields, drop plates, and all other devices necessary for the proper application of the hardware.

1.3 RELATED SECTIONS

- A. Division 06 Wood, Plastics, and Composites
- B. Section 08 14 16 Flush Wood Doors
- C. Section 08 41 13 Aluminum-Framed Entrances and Storefronts
- D. Section 08 80 00 Glazing
- E. Division 26 Electrical
- F. Specific Omissions: Hardware for the following is specified or indicated elsewhere, unless specifically listed in the hardware sets:
 - 1. Windows.
 - 2. Cabinets of all kinds, including open wall shelving and locks.
 - 3. Signs, except as noted.
 - 4. Toilet accessories of all kinds including grab bars and coat hooks.
 - 5. Overhead doors (except cylinders where scheduled).

1.4 REFERENCES

- A. International Code Congress (ICC)/American National Standards Institute (ANSI):
 - 1. ICC/ANSI A117.1, Accessible and Usable Buildings and Facilities.
 - 2. ANSI/BHMA A156.1 A156.24 Standards for Hardware and Specialties.
- B. National Fire Protection Association (NFPA):
 - 1. NFPA 101 Life Safety Code
- C. Underwriters Laboratories, Inc. (UL):
 - 1. UL 10C Positive Pressure Test of Fire Door Assemblies
 - 2. UL 305 Panic Hardware
- D. Applicable state and local building codes.

- E. Accessibility
 - ADA Americans with Disabilities Act
- F. Door and Hardware Institute (DHI):
 - 1. Sequence and Format for the Hardware Schedule.
 - 2. Recommended Locations for Builders Hardware

1.5 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Product Data: Include manufacturers' technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
- C. Final Hardware Schedule Content: Based on hardware indicated, organize schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:
 - 1. Type, style, function, size, and finish of each hardware item.
 - 2. Name and manufacturer of each item.
 - 3. Fastenings and other pertinent information.
 - 4. Location of each hardware set cross-referenced to indications on Drawings.
 - 5. Explanation of all abbreviations, symbols, and codes contained in schedule.
 - 6. Mounting locations for hardware.
 - 7. Mounting type for closers.
 - 8. Door and frame sizes, materials, degree of opening, handing, and fire/smoke rating.
 - 9. Name and phone number for the local manufacturer's representative for each product.
- D. Key Schedule: After a keying meeting between representatives of the Owner, Architect, and the hardware supplier, provide a keying schedule, listing the levels of keying, as well as an explanation of the key system's function, the key symbols used, and the door numbers controlled. This schedule can be submitted as a part of the hardware schedule or as a separate schedule.
- E. Samples: If requested by the Architect, submit samples of each type of exposed hardware unit in finish indicated and tagged with full description for coordination with schedule.
 - Samples will be returned to the supplier in like-new condition. Units that are acceptable
 may, after final check of operations, be incorporated in the Work, within limitations of key
 coordination requirements.
- F. Templates: After final approval of the hardware schedule, provide templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware.
- G. Wiring Diagrams: After final approval of the hardware schedule, submit wiring diagrams as required for the proper installation of all electrical, electro-mechanical, and/or electro-magnetic products.
- H. Operations and Maintenance Data: Provide in accordance with Section 01 78 23 and include the following:
 - 1. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.

- 2. Catalog pages for each product.
- 3. Name, address, and phone number of local representative for each manufacturer.
- 4. Parts list for each product.
- 5. Copy of final approved hardware schedule, edited to reflect "As installed."
- 6. Copy of final keying schedule.
- 7. As installed "Wiring Diagrams" for each opening connected to power, both low voltage and 110 volts.
- 8. One (1) complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.
- 9. Copy of warranties including appropriate reference numbers for manufacturers to identify the project.

1.6 QUALITY ASSURANCE

- A. Substitutions: Submit substitutions in accordance with Division 01.
- B. Supplier Qualifications: A recognized architectural hardware supplier, with warehousing facilities in the Project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and that employs an accredited Architectural Hardware Consultant (AHC), who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work for consultation.
- C. Product Single Source Responsibility: Obtain each type of hardware (latch and locksets, hinges, closers, etc.) from a single manufacturer.
- D. Supplier Single Source Responsibility: Procure hardware for all doors from a single supplier.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Tag each item or package separately with identification related to final hardware schedule, and include basic installation instructions with each item or package.
- B. Each article of hardware shall be individually packaged in manufacturer's original packaging.
- C. Contractor will provide secure lock-up for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items so that completion of the Work will not be delayed by hardware losses both before and after installation.
- D. Items damaged in shipment shall be replaced promptly and with proper material and paid for by whomever did the damage or caused the damage to occur.
- E. All the hardware shall be handled at this project in a manner to avoid damage, marring or scratching. Any irregularities that occur to the hardware after it has been delivered to the project shall be corrected, replaced or repaired by the Contractor at their expense. All hardware items shall be protected against malfunction due to paint, solvent, cleanser or any chemical agent.
- F. No direct shipments will be allowed unless approved by the Contractor.

1.8 WARRANTY

- A. Starting date for warranty periods to be date of manufacture of that hardware item.
- B. No liability is to be assumed where damage or faulty operation is due to improper installation, improper usage or abuse.
- C. Provide guarantee from hardware supplier as follows:
 - 1. Hinges: Limited Lifetime.
 - 2. Closers: Thirty (30) years.
 - 3. Mechanical Exit Devices: Three (3)
 - 4. All other Hardware: One (1) year.
- D. Products judged to be defective during the warranty period shall be replaced or repaired in accordance with the manufacturer's warranty, at no additional cost to the Owner.

1.9 MAINTENANCE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Approval of manufacturers other than those listed shall be in accordance with Paragraph 1.6A.
- B. Note that even though an acceptable substitute manufacturer may be listed, the product must provide all the functions and features of the specified product or it will not be approved.
- C. Hand of Door: Drawings show direction of slide, swing, or hand of each door leaf. Furnish each item of hardware for proper installation and operation of door movement as shown.
- D. Where the exact types of hardware specified are not adaptable to the finished shape or size of the members requiring hardware, furnish suitable types having as nearly as possible the same operation and quality as the type specified, subject to Architect's approval.

2.2 MATERIALS

A. Fasteners:

- Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation.
- 2. Furnish screws for installation with each hardware item. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of this other work as closely as possible including "prepared for paint" surfaces to receive painted finish.
- 3. Provide concealed fasteners for hardware units that are exposed when door is closed except to the extent that no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless their use is the only means of reinforcing the work adequately to fasten the hardware securely.
- 4. All hardware shall be installed with the fasteners provided by the hardware manufacturer.

2.3 HINGES

- A. Provide five-knuckle, concealed bearing hinges of type, material, and height as outlined in the following guide for this specification:
- B. 1-3/4 inch thick doors, up to and including 36 inches wide:
 - 1. Exterior: standard weight, stainless steel, 4-1/2 inches high
 - 2. Interior: standard weight, steel, 4-1/2 inches high
- C. 1-3/4 inch thick doors over 36 inches wide:
 - 1. Exterior: heavy weight, stainless steel, 5 inches high
 - 2. Interior: heavy weight, steel, 5 inches high
- D. Provide three hinges per door leaf for doors 90 inches or less in height, and one additional hinge for each 30 inches of additional door height.
- E. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
 - 1. Steel Hinges: Steel pins
 - 2. Non-Ferrous Hinges: Stainless steel pins
 - 3. Out-Swinging Exterior Doors: Non-removable pins
 - 4. Out-Swinging Interior Lockable Doors: Non-removable pins
 - 5. Interior Non-lockable Doors: Non-rising pins
- F. The width of hinges shall be 4-1/2 inches at 1-3/4 inch thick doors. Adjust hinge width as required for door, frame, and/or wall conditions to allow proper degree of opening.
- G. Provide hinges with electrified option where specified. Provide with sufficient number and gage of concealed wires to accommodate electric function of specified hardware. Locate electric hinge at second hinge from bottom or nearest to the electrified locking component.
- H. Provide mortar guard for each electrified hinge specified, unless specified in hollow metal frame specification.
- I. Acceptable manufacturers and/or products: Stanley CB series, Hager, and Bommer.

2.4 CONTINUOUS HINGES - GEARED

- Provide aluminum geared continuous hinges conforming to ANSI A156.25, Grade 1.
- B. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T5 aluminum.
- C. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation. Provide hinge with no less than 32 bearings.
- D. Hinges shall be capable of supporting door weights up to 600 pounds, and shall be successfully tested for 1,500,000 cycles.
- E. On fire-rated doors, provide aluminum geared continuous hinges that are classified for use on rated doors by a testing agency acceptable to the authority having jurisdiction.

- F. Install hinges with fasteners supplied by manufacturer.
- G. Acceptable manufacturers and products: Stanley 661HD series, Roton, and Select.

2.5 KEYPAD WI-FI LOCKSET

- A. Provide Schlage Encode Lever Lockset and accessories need to complete system and coordinate with Owner's room scheduling software.
- B. Basis of design is Schlage Encode, substitutions only as approved.

2.6 EXIT DEVICES

- A. Provide exit devices tested to ANSI/BHMA A156.3 Grade 1, and UL listed for Panic Exit and/or Fire Exit Hardware.
- B. Provide touchpad type exit devices, fabricated of stainless steel, plated to the standard architectural finishes to match the balance of the door hardware.
- C. Touchpad shall extend a minimum of one half of the door width, but not the full length of the exit device rail.
- D. Devices to incorporate a deadlatching feature.
- E. Provide manufacturer's standard strikes.
- F. Provide exit devices cut to door width and height. Locate exit devices at a height recommended by the exit device manufacturer, allowable by governing building codes, and approved by the Architect.
- G. Exit devices for fire rated openings shall be UL labeled fire exit hardware.
- H. Acceptable manufacturers and/or products: Best Precision 2000 series.

2.7 DOOR CLOSERS

- A. Provide door closers certified to ANSI/BHMA A156.4 Grade 1 requirements by a BHMA certified independent testing laboratory. Door closers shall have fully hydraulic, full rack and pinion action with a high strength aluminum cylinder. Cylinder body shall be 1-1/2 inch diameter.
- B. Provide hydraulic fluid requiring no seasonal closer adjustment. Fluid shall be fireproof and shall pass the requirements of the UL10C "positive pressure" fire test.
- C. Spring power shall be continuously adjustable over the full range of closer sizes, and allow for reduced opening force as required by accessibility codes and standards. Closers shall have separate adjustment for latch speed, general speed, and backcheck.
- D. Provide closers with heavy-duty forged forearms for parallel arm closers.
- E. Closers shall not incorporate Pressure Relief Valve (PRV) technology.

- F. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other finish hardware items interfering with closer mounting.
- G. Closers shall be mounted with thru-bolts only.
- H. Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Closers shall not be visible in corridors, lobbies and other public spaces unless approved by Architect.
- I. Door closers meeting this specification: Dormakaba 8600/8900 Series, Von Duprin, Sargent.

2.8 DOOR TRIM

- A. Provide push bars of solid bar stock, diameter and length as scheduled. Push bars shall be of sufficient length to span from center to center of each stile. Where required, mount back to back with pull.
- B. Acceptable manufacturers and/or products: Trimco, Don-Jo Mfg., Burns.

2.9 PROTECTION PLATES

- A. Provide kick plates, and mop plates, minimum of 0.050 inch thick as scheduled. Furnish with machine or wood screws, finished to match plates. Sizes of plates shall be as follows:
 - a. Kick Plates 8 inches or 18 inches high (as scheduled) x 2 inches less width of door on single doors, 1 inch less width of door on pairs
- B. Acceptable manufacturers and/or products: Trimco, Don-Jo Mfg., Burns.

2.10 OVERHEAD STOPS

- A. Provide heavy duty concealed mounted overhead stop as specified for exterior and interior vestibule single acting doors.
- B. Provide medium duty surface or concealed mounted overhead stop for interior doors as specified. Provide medium duty surface mounted overhead stop for interior doors and at any door that swings more than 140 degrees before striking a wall, open against equipment, casework, sidelights, and/or where conditions do not allow a wall stop or a floor stop presents a tripping hazard.
- C. Acceptable manufacturers and/or products: Dorma, ABH Manufacturing, Glynn-Johnson.

2.11 DOOR STOPS

- A. Provide door stops for all doors in accordance with the following requirements:
 - Provide wall stops wherever possible. Provide convex type where mortise type locks are used and concave type where cylindrical type locks are used.
 - 2. Where wall stops cannot be used, provide dome type floor stops of the proper height.
 - At any opening where a wall or floor stop cannot be used, a medium duty surface mounted overhead stop shall be used.
- B. Acceptable manufacturers and/or products: Trimco, Don-Jo Mfg., Burns.

- 2.12 Thresholds, Seals, Door Sweeps, Automatic Door Bottoms, and Gasketing
 - A. Provide thresholds, weatherstripping (including door sweeps, seals, astragals) and gasketing systems (including smoke, sound, and light) as specified and per architectural details. Match finish of other items as closely as possible. Size of thresholds shall be as follows:
 - 1. Bumper Seal Thresholds 1/2 inch high x jamb depth x door width
 - B. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.
 - C. Acceptable manufacturers and/or products: National Guard, Zero, Reese.

2.13 SILENCERS

- A. Furnish "push-in" type silencers for each hollow metal or wood frame, three (3) for each single frame, two (2) for each pair frame. Omit where gasketing is scheduled.
- B. Acceptable manufacturers and/or products: Trimco, Don-Jo Mfg., Burns.

2.14 FINISHES

A. Provide finishes as specified in hardware sets.

2.15 CYLINDERS AND KEYING

- A. Provide a key system conforming to the Owner's existing key system and the following requirements:
- B. Provide removable core cylinders at all keyed devices. The manufacturer's agent, accompanied by the Owner or Owner's security agent, shall install permanent keyed cores upon completion of the project. The temporary construction cores are to be returned to the manufacturer.
- C. The manufacturers' agent, shall meet with Owner and Architect to review keying requirements and lock functions prior to ordering finish hardware. Submit a keying schedule to Architect for approval.
- D. Provide keys as follows:
 - 1. Ten grand master keys for each set.
 - 2. Ten master keys for each set.
 - 3. Three keys per core and/or cylinder.
 - 4. Two construction core control keys
 - 5. Two permanent core control keys
 - 6. Six construction master keys for each type (Contractor is to provide one set of construction keys to Architect)

E. Visual key control:

- Keys shall be stamped with their respective key set number and stamped "DO NOT DUPLICATE".
- 2. Grand master and master keys shall be stamped with their respective key set letters.
- 3. Do not stamp any keys with the factory key change number.

- 4. Do not stamp any cores with key set on face (front) of Core. Stamp on back or side of cores so not to be visible when core is in cylinder.
- F. Deliver grand master keys, master keys, change keys, and/or key blanks from the factory or directly to the Owner in sealed containers, return receipt requested. Failure to comply with these requirements may be cause to require replacement of all or any part of the keying system that was compromised at no additional cost to the Owner.
- G. Approved products: Match Owner's existing system.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to installation of any hardware, examine doors, frames, walls and related items for conditions that would prevent proper installation of finish hardware. Correct defects prior to proceeding with installation.
- B. Pre-Installation Conference: Prior to the installation of hardware, manufacturer's representatives for locksets, closers, and exit devices shall arrange and hold a jobsite meeting to instruct the installing contractor's personnel on the proper installation of their respective products. A letter of compliance, indicating when the meeting was held and who was in attendance, shall be sent to Architect and Owner.

3.2 INSTALLATION

- A. Hardware shall be installed by qualified tradesmen skilled in application of commercial grade hardware. For technical assistance if necessary, installers may contact manufacturer's representative for the item in question, as listed in the hardware schedule.
- B. Mount hardware units at heights indicated in "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute.
- C. Install each hardware item in compliance with the manufacturer's instructions and recommendations, using only the fasteners provided by the manufacturer.
- D. Do not install surface mounted items until finishes have been completed on the substrate. Protect installed hardware during painting.
- E. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- F. Operating parts shall move freely and smoothly without binding, sticking, or excessive clearance.
- G. Set thresholds for exterior doors in full bed of butyl rubber or polyisobutylene mastic sealant complying with requirements specified in Section 07 92 00.
- 3.3 ADJUSTING, CLEANING AND DEMONSTRATING

- A. Adjust and check each operating item of hardware and each door, to insure proper operation or function of every unit. Replace units that cannot be adjusted to operate freely and smoothly.
- B. Where door hardware is installed more than one (1) month prior to acceptance or occupancy of a space or area, return to the installation during the week prior to acceptance or occupancy and make a final check and adjustment of hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.
- C. Clean adjacent surfaces soiled by hardware installation. Remove bulk trash form the building, clean up any dust/debris caused by the installation of hardware.
- D. Instruct Owner's personnel in the proper adjustment, lubrication, and maintenance of door hardware and hardware finishes.

3.4 FIELD QUALITY CONTROL

- A. At completion of the project, a qualified factory representative for the manufacturers of locksets, closers, and exit devices shall inspect installations of their products. After the inspections, a letter shall be sent to the Architect reporting on conditions, verifying that their respective products have been properly installed and adjusted.
- B. Six-Month Adjustment: Approximately six months after the date of Substantial Completion, the installer, accompanied by representatives of the manufacturers of latchsets and locksets, door control devices, and of other major hardware suppliers, shall return to the Project to perform the following work:
 - 1. Examine and re-adjust each item of door hardware as necessary to restore function of doors and hardware to comply with specified requirements.
 - 2. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures.
 - 3. Replace hardware items that have deteriorated or failed due to faulty design, materials, or installation of hardware units.
 - 4. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware.

3.5 PROTECTION

A. Provide for the proper protection of items of hardware until Owner accepts the project as complete. Damaged or disfigured hardware shall be replaced or repaired by the responsible party.

3.6 HARDWARE SCHEDULE

- A. Provide hardware for each door to comply with requirements of hardware set numbers indicated in door schedule, and in the following schedule of hardware sets.
- B. It is intended that the following schedule includes all items of finish hardware necessary to complete the work. If a discrepancy is found in the schedule, such as a missing item, improper hardware for a frame, door or fire codes, the preamble will be the deciding document.
- C. Hardware sets:

HARDWARE SETS:

| Set #01 – STUDY/MAKER SPACE |
|-----------------------------|
| DOORS 10, 15, 16, 17, 18 |

| 3 | Hinge | CB168 NRP SERIES AS SPECIFIED | 26D | BES |
|---|----------------|-------------------------------|--------|-----|
| 1 | Keypad Lock | Encode Lever/Latitude | Nickel | SC |
| 1 | Door Closer | 8616 SDS | 689 | DK |
| 1 | Kick Plate | K0050 8" X 1" LDW CSK B4E | 630 | TRI |
| 1 | Gasketing | 5020 Head & Jambs | CL | NGP |
| 1 | Auto Door Bttm | 420N 36" | AL | NGP |
| Provide kickplates only at doors 10 and 18. | | | | |

Set #02 – NEW PAIR OF EXTERIOR DOORS

| DOOR 34 | | | | |
|---------|--|--|-----|----|
| 2 | Continuous Hinge | 661HD | DKB | ST |
| 1 | Exit Device | 2601 CD @ LHR LEAF | 690 | PR |
| 1 | Exit Device | 2603 CD NCA-03 @ RHR LEAF | 690 | PR |
| 2 | Mortise Cylinder | AS REQUIRED FOR CYLINDER DOGGING | 613 | BE |
| 1 | Rim Cylinder | AS REQUIRED EXTERIOR | 613 | BE |
| 2 | Door Pull | 1191-3 | 613 | TR |
| 1 | Auto Operator/Accessories @ LHR LEAF | | | |
| | SPECIFIED/PROVIDED UNDER SECTION 087113 | | | |
| 1 | Closer | 8916 SDS @ RHR LEAF | | DM |
| 1 | Overhead Stop | SURFACE HEAVY DUTY 900 SERIES @ LHR LEAF | 695 | AB |
| 1 St | Meeting Stile Seal | 115N X DOOR HEIGHT | DKB | NA |
| 2 | Door Sweep | C627 (DOOR WIDTH) | AL | NA |
| 1 | Integral Seals By Frame Mfr. INTEGRAL SEALS BY FRAME MFR. | | | |
| 1 | 1 Threshold - Bumper Seal 1/2" HIGH X JAMB DEPTH X OPENING WIDTH | | | NA |

NOTE: ALL WIRING AND CONNECTIONS BY DIVISION 26, ELECTRICAL. EGRESS ALWAYS POSSIBLE.

OPEN HOURS:

EXIT DEVICES ARE DOGGED, THEN DOORS CAN BE OPERATED MANUALLY OR AUTOMATICALLY BY PUSH BUTTONS.

CLOSED HOURS:

EXIT DEVICES ARE UN-DOGGED, DOORS ARE CLOSED AND LATCHED. ACCESS ONLY BY KEY.

Set #03 - EXTERIOR EXIT AT HOPE STREET DOOR 30

| 2 | Continuous Hinge | 661HD | DKB | ST |
|---|---|---|-----|----|
| 1 | Exit Device | 2601 CD @ LHR LEAF | 690 | PR |
| 1 | Exit Device | 2603 CD NCA-03 @ RHR LEAF | 690 | PR |
| 2 | Mortise Cylinder | AS REQUIRED FOR CYLINDER DOGGING | 613 | BE |
| 1 | Rim Cylinder | AS REQUIRED EXTERIOR | 613 | BE |
| 2 | Door Pull | 1191-3 – match existing CTC holes in existing doors | 613 | TR |
| 1 | Auto Operator/Accessories @ RHR LEAF | | | |
| | SPECIFIED/PROVIDED UNDER SECTION 087113 | | | |
| 1 | Closer | 8916 SDS @ LHR LEAF | | DM |
| 1 | Overhead Stop | SURFACE HEAVY DUTY 900 SERIES @ RHR LEAF | 695 | AB |

DOOR HARDWARE

| 1 St | : Meeting Stile Seal | 115N X DOOR HEIGHT | DKB | NA |
|------|----------------------|---|-----|----|
| 2 | Door Sweep | C627 (DOOR WIDTH) | AL | NA |
| 1 | Integral Seals By F | rame Mfr. INTEGRAL SEALS BY FRAME MFR. | | |
| 1 | Threshold - Bumpe | r Seal 1/2" HIGH X JAMB DEPTH X OPENING WIDTH | AL | NA |

NOTE: ALL WIRING AND CONNECTIONS BY DIVISION 26, ELECTRICAL. EGRESS ALWAYS POSSIBLE.

OPEN HOURS:

EXIT DEVICES ARE DOGGED, THEN DOORS CAN BE OPERATED MANUALLY OR AUTOMATICALLY BY PUSH BUTTONS.

CLOSED HOURS:

EXIT DEVICES ARE UN-DOGGED, DOORS ARE CLOSED AND LATCHED. ACCESS ONLY BY KEY.

COORIDNATE NEW HARDWARE WITH EXISTING DOORS/FRAMES.

END OF SECTION

SECTION 087113 - AUTOMATIC DOOR OPERATORS

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 the following types of automatic door operators:
 - Low-energy door operators for swinging doors.
- B. Related Sections:
 - 1. Division 7 Sections for caulking to the extent not specified in this section.
 - 2. Division 8 Sections for "Aluminum-Framed Entrances and Storefronts" for entrances furnished and installed separately in Division 8 Section.
 - 3. Division 8 Section "Door Hardware" for hardware to the extent not specified in this section.
 - 4. Division 8 Section "Glazing" for materials and installation requirements of glazing for automatic entrances.
 - 5. Division 26 and 28 Sections for electrical connections including conduit and wiring for automatic entrance operators and access-control devices.

1.3 REFERENCES

- A. References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC International Building Code.
 - 3. CUL Approved for use in Canada.
 - 4. NFPA 70 National Electrical Code.
 - 5. NFPA 80 Fire Doors and Windows.
 - 6. NFPA 101 Life Safety Code.
 - 7. NFPA 105 Installation of Smoke Door Assemblies.
- B. American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA).
 - 1. ANSI/BHMA A156.19 Standards for Power Assist and Low Energy Power Operated Doors.
- C. Underwriters Laboratories (UL).
 - 1. UL10C Positive Pressure Fire Tests of Door Assemblies.
 - 2. UL 325 Standard for Safety for Door, Drapery, Gate, Louver, and Window Operators and Systems.
- D. American Association of Automatic Door Manufacturers (AAADM).
- E. American Society for Testing and Materials (ASTM).
 - 1. ASTM B221 Standard Specification for Aluminum and Aluminum Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.

- 2. ASTM B209 Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate.
- F. American Architectural Manufacturers Association (AAMA).
 - 1. AAMA 611 Voluntary Specification for Anodized Architectural Aluminum.
- G. National Association of Architectural Metal Manufacturers (NAAMM).
 - 1. Metal Finishes Manual for Architectural Metal Products.
- H. International Code Council (IBC).
 - 1. IBC: International Building Code Building Code.

1.4 DEFINITIONS

- A. Activation device: Device that, when actuated, sends an electrical signal to the door operator to initiate the door operation.
- B. Monitored Safety Devices: A tested system that works in conjunction with the automatic door control that detects the presence of a person or an object within a zone where contact could occur and provides a signal to stop the movement of the door.
- C. AAADM: American Association of Automatic Door Manufacturers.
- D. Operating ambient Temperature Range: 5 Degrees F to plus 122 degrees F (minus 15 C to 50 degrees C).
- E. For automatic door terminology, refer to ANSI/BHMA A 156.19 for definitions of terms.

1.5 PERFORMANCE REQUIREMENTS

- A. General: Provide automatic doors that have been designed and fabricated to comply with specified performance requirements, as demonstrated by testing manufacturers corresponding systems.
- B. Compliance:
 - 1. ICC/IBC International Building Code
 - 2. ANSI/BHMA A 156.19 American National Standard for Power Operated Doors Pedestrian Doors.
 - 3. UL 325 Listed
 - 4. NFPA 70 National Electrical Code.
 - NFPA 101 Life Safety Code
 - 6. CUL Approved for use in Canada
 - 7. UL Listed Fire Door Operator with Automatic Closer
- C. Automatic Door equipment accommodates medium to heavy pedestrian traffic.
- D. Opening Force Requirements:
 - . Power-Operated swinging doors shall open with a manual force not to exceed 30 lbf (133N) to set the door in motion and 15 lbf to fully open the door with force applied at 1" (25mm) from the latched edge of the door. The required force to prevent a stopped door from opening or closing shall exceed 15 lbf (67N) measured 1" (25mm) from the latch edge of the door at any point during the opening or closing.

E. Closing Time:

- 1. Door operators shall be field adjustable to close 90 degrees to 10 degrees in 3 seconds or longer per ANSI/BHMA A 156.19 standard.
- 2. Door shall be field adjusted to close from 10 degrees to fully closed position in not less than 1.5 seconds.

1.6 SUBMITTALS

- A. Comply with Division 01 Submittal Procedures.
- B. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles fabrication, operational descriptions and finishes.
- C. Shop Drawings: For automatic entrances. Include plans, elevations, sections, details, hardware mounting heights, additional accessories and attachments to other work.
- D. Samples: color samples of exposed finish as required.
- E. Informational Submittals: Manufacturers product information and applicable sustainability program credits that are available towards a LEED rated product certification.
 - 1. Credit MR 4.1 and 4.2: Manufacture's or fabricator's certificate indicating percentage of post-consumer recycled content by weight and pre-consumer recycled content by weight for each product specified under this section.
- F. Manufacturers Field Reports: Submit manufacturer's field reports from AAADM certified technician of inspection and approval of doors for compliance with ANSI/BHMA A 156.19 after completion of installation.
- G. Operating and Maintenance Manuals: Provide manufacturers operating, owners and maintenance manuals for each item specified as required in Division 01, Closeout Submittals.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: 10 years minimum of documented experience in manufacturing door equipment similar to that indicated within this specification with a proven record of successful service performance. A manufacturer with company certificate issued by AAADM.
- B. Installer Qualifications: Installers, trained by the primary product manufacturers, with a minimum 5 years documented experience installing and maintenance of units similar in material, design, and extent to that indicated in this specification and whose work has resulted in construction with a record of successful in-service performance. Manufacturer's authorized representative who is trained and approved for installation and maintenance of units by AAADM required for this Project
- C. Source Limitations for Automatic Operators: Obtain each type of automatic door operator and senor components specified in this section from single source from single manufacturer.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- E. Power-Operated Door Standard: ANSI/BHMA A 156.19 Current year.

F. Emergency-Exit Door Requirements: Comply with requirements of authorities having jurisdiction for automatic entrances serving as a required means of egress.

1.8 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings to receive automatic entrances by field measurements before fabrication.

1.9 COORDINATION

- A. Coordinate door operators with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish. Coordinate hardware for automatic entrances with hardware required for rest of project.
- B. Electrical System Roughing-in: Coordinate layout and installation of automatic power door operator with connections to power supplies and access-control system.

1.10 WARRANTY

- A. Automatic Door Operators to be free of defects in material and workmanship for a period of Two (2) years from the date of substantial completion.
- B. During the warranty period a factory trained technician shall preform service and affect repairs. A safety inspection shall be performed after each adjustment or repair and a completed inspection form submitted to the owner.
- C. During the warranty period all warranty work shall be performed during normal working hours.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. dormakaba Reamstown, PA 1-844-SPEC-NOW (1-844-773-2669) Website: www.dormakaba.us
- B. Substitutions: Stanley Magic Force and Assa SW200i.

2.2 AUTOMATIC SWING DOOR OPERATOR

- A. Model: dormakaba, ED Series ED250 (Basis of Design) An Integrated, self-learning automatic swing door operator with an advanced CPU, a multistage gearbox with real time adaptive software and available user interface.
 - 1. Automatic Door Configuration:
 - a. Configuration: Single swing door or pair of doors swinging.
 - b. Traffic Pattern: two-way.
 - c. Mounting: Surface applied

B. Control Features

Power-hold Close

- 2. Built in Lock Delay
- 3. On-Off-Hold Open switch control to control door function, (Automatic-Hold Open- Exit Only)
- 4. On-Off Power Switch
- 5. Fire Alarm Integration
- 6. Field Adjustable Handing
- 7. Push and Go
- 8. Power Assist Opening Activation
- 9. Intergraded Connections for Monitored Safety Sensors and other accessories.
- 10. Integrated access control

C. Door Control Features

- 1. Wind Load and Stack Pressure microprocessor monitored with power boost to ensure secure opening and closing in changing conditions.
- 2. Door Weight Max. ED 250 800 lbs.
- D. Header Size: Narrow header height at 4" x 6" depth.

2.3 ACTIVATION DEVICES

- A. Activation Device:
 - 1. Push Plate: Hard wired, 4-3/4 inch square stainless steel push plate engraved with "Push to Open" with a handicap logo.
 - 2. Access control activator: as selected by architect.

2.4 SAFETY DEVICES

A. Provide door controls in accordance with ANSI/BHMA standards A 156.19 and complying with cited BHMA standard for condition of exposure and for long-term, maintenance-free operation under normal traffic load. When presence sensors are used, they shall be monitored in accordance with ANSI/BHMA A 156.10. Coordinate controls with door operation and door operators.

2.5 ELECTRICAL

A. Electrical 115 V AC +/- 10% 50/60 Hz 6.6 A max.

2.6 ALUMINUM FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Anodized Finish:
 - 1. Dark Bronze Anodized.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and frames with Installer present, for compliance with requirements for installation tolerances, wall and floor construction and other conditions affecting performance of automatic entrances.
- B. Examine roughing in for electrical source power to verify actual locations of wiring connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure non-movement joints.
- B. Entrances: Install automatic entrances plumb and true in alignment with established lines and grades without warp or rack of framing members and doors. Anchor securely in place.
 - 1. Install surface-mounted hardware using concealed fasteners to greatest extent possible.
 - 2. Set headers, carrier assemblies, tracks, operating brackets, and guides level and true to location with anchorage for permanent support.
- C. Door Operators: Connect door operators to electrical power distribution system as specified in Division 26 Sections [including smoke evacuation and/or fire detection system.]
- D. Sealants: Comply with requirements specified in Division 07 Section "Joint Sealants" to provide seal between the operator housing and wall surface. installation.
- E. Signage: Apply signage on both sides of each door and each sidelight as required by ANSI/BHMA A 156.19

3.3 FIELD QUALITY CONTROL

- A. Manufacturer's representative shall provide technical assistance and guidance for installation of automatic doors.
 - 1. Factory trained and AAADM certified representative shall test and inspect each automatic door to determine compliance of the installed system to ANSI/BHMA A 156.19

3.4 ADJUSTING

A. Adjust door operators and controls for smooth and safe operation.

3.5 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by automatic operator installation promptly after installation .

3.6 DEMONSTRATION

A. Engage a factory authorized representative to train Owner's maintenance personnel to adjust, operate, and maintain safe operation of automatic entrances.

END OF SECTION

SECTION 08 80 00 - GLASS AND GLAZING

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. Glazing exterior entrances.
 - 2. Interior glazing.

1.3 RELATED SECTIONS:

- A. Related work under other sections:
 - 1. Division 07 Section "Joint Sealants."
 - 2. Division 08 Section "Aluminum Entrances and Storefronts."
 - 3. Division 08 Section "Hollow Metal Doors and Frames."

1.4 QUALITY ASSURANCE:

- A. Manufacturer of Basic Glass: (one of the following)
 - 1. C-E Glass Division
 - 2. Libbey-Owens-Ford Company (Spectrum)
 - 3. PPG Industries, Inc.
 - 4. Virginia Glass Co.
 - 5. Cardinal Glass Co.

1.5 DEFINITIONS

- A. Manufacturers of Glass Products: Firms that produce primary glass, fabricated glass, or both, as defined in reference glazing publications.
- B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.
- C. Interspace: Space between lites of an insulating-glass unit that contains dehydrated air or a specified gas.
- D. Deterioration of Insulating Glass: Failure of hermetic seal under normal use that is attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning insulating glass contrary to manufacturer's written instructions.

Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1.6 PERFORMANCE REQUIREMENTS

- A. General: Provide glazing systems capable of withstanding normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
- B. Glass Design: Glass thickness designations indicated are minimums and are for detailing only. Confirm glass thickness by analyzing Project loads and in-service conditions. Provide glass lites in the thickness designations indicated for various size openings, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:
 - Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E 1300, according to the following requirements:
 - a. Specified Design Wind Loads: As required by Code.
 - b. Specified Design Snow Loads for Sloped Glazing: As required by Code.
 - c. Probability of Breakage for Vertical Glazing: 8 lites per 1000 for lites set vertically or not more than 15 degrees off vertical and under wind action.
 - 1) Load Duration: 60 seconds or less.
 - d. Probability of Breakage for Sloped Glazing: 1 lite per 1000 for lites set more than 15 degrees off vertical and under wind and snow action.
 - 1) Load Duration: 30 days.
 - e. Maximum Lateral Deflection: For the following types of glass supported on all 4 edges, provide thickness required that limits center deflection at design wind pressure to 1/50 times the short side strength or 1 inch, whichever is less.
 - 1) For monolithic-glass lites heat-treated to resist wind loads.
 - 2) For insulating glass.
 - 3) For laminated-glass lites.
 - f. Minimum Glass Thickness for Exterior Lites: Not less than 6 mm.
- C. Thermal Movements: Provide glazing that allows for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures acting on glass framing members and glazing components. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
- D. Thermal and Optical Performance Properties: Provide glass with performance properties specified based on manufacturer's published test data, as determined according to procedures indicated below:
 - 1. For insulating-glass units, properties are based on units with lites 6.0 mm thick and have a nominal 1/2-inch-wide interspace.
 - 2. Center-of-Glass Values: Based on using LBL-44789 WINDOW 5.0 computer program for the following methodologies:
 - a. U-Factors: NFRC 100 expressed as Btu/sq. ft. x h x deg F.
 - b. Solar Heat Gain Coefficient: NFRC 200.
 - c. Solar Optical Properties: NFRC 300.
- 1.7 SUBMITTALS

- A. Product Data: For each glass product and glazing material indicated.
- B. Samples: Submit 12" x 12" x 1" manufacturers/fabricators samples of each glass Type and any alternate samples that may be requested by the Architect. Samples to match exactly the glass specifications, manufacturing techniques, thickness, color, and/or coatings.
- C. Glazing Schedule: Use same designations indicated on Drawings for glazed openings in preparing a schedule listing glass types and thicknesses for each size opening and location.
- D. Product Certificates: Signed by manufacturers of glass and glazing products certifying that products furnished comply with requirements.
 - 1. For solar-control low-e-coated glass, provide documentation demonstrating that manufacturer of coated glass is certified by coating manufacturer.
- E. Qualification Data: For installers.
- F. Preconstruction Adhesion and Compatibility Test Report: From glazing sealant manufacturer indicating glazing sealants were tested for adhesion to glass and glazing channel substrates and for compatibility with glass and other glazing materials.
- G. Product Test Reports: For each of the following types of glazing products.
 - 1. Insulating glass.
 - 2. Glazing sealants.
 - 3. Glazing gaskets.
- H. Warranties: Special warranties specified in this Section.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance.
- B. Source Limitations for Glass: Obtain the following through one source from a single manufacturer for each glass type: clear float glass, laminated glass and insulating glass.
- C. Source Limitations for Glass Sputter-Coated with Solar Control Low-E Coatings: Where solar-control low-e coatings of a primary glass manufacturer that has established a certified fabricator program is specified, obtain sputter-coated solar-control low-e coated glass in fabricated units from a manufacturer that is certified by coated-glass manufacturer.
- D. Source Limitations for Glazing Accessories: Obtain glazing accessories through one source from a single manufacturer for each product and installation method indicated.
- E. Elastometric Glazing Sealant Product Testing: Obtain sealant test results for product test reports in "Submittals" Article from a qualified testing agency based on testing current sealant formulations within a 36-month period.
 - Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated, as documented according to ASTM E 548.
 - 2. Test elastometric glazing sealants for compliance with requirements specified by reference to ASTM C 920, and where applicable, to other standard test methods.

- F. Preconstruction Adhesion and Compatibility Testing: Submit to elastometric glazing sealant manufacturers, for testing indicated below, samples of each glazing material type, tape sealant, gasket, glazing accessory, and glass-framing member that will contact or affect elastometric glazing sealants:
 - 1. Use ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glass, tape sealants, gaskets, and glazing channel substrates.
 - 2. Submit not fewer than eight pieces of each type of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
 - 3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
 - 4. For materials failing tests, obtain sealant manufacturer's written instructions for corrective measures, including the use of specially formulated primers.
 - 5. Testing will not be required if elastometric glazing sealant manufacturers submit data based on previous testing of current sealant products for adhesion to, and compatibility with, glazing, materials matching those submitted.
- G. Safety Glazing Products: Comply with testing requirements in 16 CFR 120.
 - 1. Subject to compliance with requirements, obtain safety glazing products permanently marked with certification label of the Safety Glazing Certification Council or another certification agency acceptable to authorities having jurisdiction.
 - Where glazing units, including Kind FT glass and laminated glass, are specified in Part 2 articles for glazing lites more than 9 sq. ft. in exposed surface area of one side, provide glazing products that comply with Category II materials, for lites 9 sq. ft. or less in exposed surface area of one side, providing glazing products that comply with Category I or II materials, except for hazardous locations where Category II materials are required by 16 CFR 1201 and regulations of authorities having jurisdication.
- H. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 - 1. GANA Publications: GANA Laminated Division's "Laminated Glass Design Guide" and GANA's "Glazing Manual".
 - 2. AAMA Publications: AAMA GDSG-1,: Glass Design for Sloped Glazing," and AAMA TIR-A7, "Sloped Glazing Guidelines."
 - 3. IGMA Publication for Sloped Glazing: IGMA TB-3001, "Sloped Glazing Guidelines."
 - 4. IGMA Publication for Insulating Glass: SIGMA TM-3000, "Glazing Guidelines for Sealed Insulating Glass Units."
- I. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the following testing and inspecting agency:
 - 1. Insulating Glass Certification Council.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials according to manufacturers written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.
- B. For insulating-glass units that will be exposed to substantial altitude changes, comply with insulating-glass manufacturer's written recommendations for venting and sealing to avoid hermetic seal ruptures.

1.10 JOB CONDITIONS:

- A. Examine the framing and glazing channel surfaces, backing, removable stop design, and the conditions under which the glazing is to be performed, and notify the Contractor in writing of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the glazing until unsatisfactory conditions have been corrected.
- B. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
 - 1. Do not install liquid glazing sealants when ambient and substrate temperature conditions are outside limits permitted by glazing sealant manufacturer or below 40 deg F.

1.11 WARRANTY

- A. Manufacturer's Special Warranty for Insulated Glass and for Coated-Glass Products: Manufacturer's standard form, made out to the Owner and signed by coated glass manufacturer agreeing to replace coated-glass units that deteriorate as defined in "Definitions" Article, f.o.b. the nearest shipping point to Project site, within specified warranty period indicated below.
 - 1. Warranty Period: Ten years from date of Substantial Completion.
- B. Manufacturer's Special Warranty on Laminated Glass: Manufacturer's standard form, made-out to the Owner and signed by laminated-glass manufacturer agreeing to replace laminated-glass units that deteriorate as defined in "Definitions" Article, f.o.b. the nearest shipping point to Project site, within specified warranty period indicated below.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. Glass:

- Plate Glass: Polished plate or float glass; FS DD-G-451, 1/4" thick, except as otherwise indicated.
 - a. Clear: Type I, Class 1, Quality q3.
 - b. Tinted: Type I, Class 3, Quality q3, color as selected.
- 2. Tempered Safety Glass: Either plate glass or float glass (FS DD-G-1403); which has been heat-strengthened by manufacturer's standard process (after cutting to final size), to achieve a flexural strength of four times normal glass strength; 1/4" thick, except as otherwise indicated.
 - a. Clear: Kind FT, Condition A, Type I, Class 1, Quality q3.
 - b. Tinted: Kind FT, Condition A, Type I, Class 3, Quality q3, color as selected.
- B. Insulating Glass: Manufacturer's standard units of two sheets of 1/4" thick plate or tempered glass as required (inner sheet-clear as specified above; exterior sheet clear, as specified above); permanently and hermetically sealed together at edges with spacers, sealant and desiccant, etc.; to provide a dehydrated air space 1/2" thick with -60 degrees F. dew point; fabricated to the sizes and shapes indicated. Permanently label all sealed insulating units through the IGCC. Provide units with Class "C" label.
 - 1. Guarantee: Provide manufacturer's ten (10) year guarantee.

- C. Tempered Clear Glass: Mirror Glazing Quality, for blemish requirements; and comply with ASTM C 1048 for Kind FT, Condition A, tempered float glass before silver coating is applied.
 - 1. Nominal Thickness: 1/4-inch.
- D. Edge Seals: ASTM E 773, with aluminum spacers and silicone sealant for glass spacer seals.
- E. Sealants: Approved by glass manufacturer, grey color as approved by the Architect.

2.2 GLAZING SEALANTS/COMPOUNDS:

- A. General: Provide products of type indicated, complying with the following requirements:
 - 1. Compatibility: Verify glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
 - 2. Suitability: Comply with sealant and glass manufacturer's written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
 - 3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.
- B. Two-Component Polysulfide Glazing Sealant: Polysulfide two-part elastomeric sealant, complying with FS TT-S-00227 Class A, Type 2 (non-sag); with container bearing Thiokol Chemical Corporation seal of approval; compounded by manufacturer specifically for glazing.
- C. Butyl Rubber Glazing Tape: Partly-vulcanized, self-adhesive, non-staining, elastomeric butyl rubber tape, 98% solids, intended for 35% compression, no appreciable deterioration for 3000 hour test in Atlas Weatherometer.
- D. Acrylic-Latex Glazing Sealant (interior only): Modified latex rubber and acrylic emulsion-polymer, compounded specifically as a glazing sealant with permanent flexibility (non-hardening), non-staining and non-bleeding.
- E. Glazing sealant for fire-resistive glazing products: Identical to products used in test assemblies to obtain fire-protection rating.

2.3 MISCELLANEOUS GLAZING MATERIALS:

- A. Setting Blocks: Neoprene, 70-90 durometer hardness, compatible with sealants used.
- B. Spacers: Neoprene, 40-50 durometer hardness, compatible with sealants used.
- C. Compressible Filler Rod (Cp-FR): Closed-cell or waterproof-jacketed rod stock of synthetic rubber or plastic foam, compatible with sealants used, flexible and resilient, with 5-10 psi compression strength for 25% deflection.
- D. Cleaners, Primers and Sealers: type recommended by sealant or gasket manufacturer.

PART 3 - EXECUTION

3.1 GENERAL:

A. Standards and Performance:

- Watertight and airtight installation of each piece of glass is required, except as otherwise shown. Each installation must withstand normal temperature changes, wind loading, impact loading (for operating sash and doors) without failure of any kind including loss or breakage of glass, failure of sealants or gaskets to remain watertight and air-tight, deterioration of glazing materials and other defects in the work.
- 2. Protect glass from edge damage at all times during handling, installation and operation of the building.
- 3. Glazing channel dimensions, as shown, are intended to provide for necessary minimum bite on the glass, minimum edge clearance and adequate sealant thicknesses, with reasonable tolerances. The Glazier is responsible for correct glass size for each opening, within the tolerances and necessary dimensions established.
- 4. Comply with combined recommendations of glass manufacturer and manufacturer of sealants and other materials used in glazing, except where more stringent requirements are shown or specified, and except where manufacturer's technical representative direct otherwise.
- 5. Comply with "Glazing Manual" by Flat Glass Marketing Association except as shown and specified otherwise, and except as specifically recommended otherwise by the manufacturers of the glass and glazing materials.
- 6. Inspect each piece of glass immediately before installation and eliminate any which have observable edge damage or face imperfections.
- 7. Unify the appearance of each series of lights by setting each piece to match the others as nearly as possible. Inspect each piece and set with pattern, draw and bow oriented in the same direction as other pieces.
- 8. Install polysulfide sealants as recommended by Thiokol Chemical Corporation, except as otherwise recommended by the sealant manufacturer.

3.2 INSTALLATION:

A. Preparation of Glazing:

- 1. Clean the glazing channel, or other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to the substrate. Remove lacquer from metal surfaces where elastomeric sealants are used.
- 2. Apply primer or sealer to joint surfaces where recommended by sealant manufacturer.

B. Glazing:

- 1. Glaze all operating sash in closed position.
- 2. Install setting blocks of proper size at quarter points of sill rabbet. Set blocks in thin course of the heel-bead compound, if any.
- 3. Provide spacers inside and out, of proper size and spacing, for all glass sizes larger than 50 united inches, except where gaskets are used for glazing. Provide I/8" minimum bite of spacers on glass and use thickness equal to sealant width; except with sealant tape, use thickness slightly less than final compressed thickness of tape.
- 4. Voids and Filler Rods: Prevent exudation of sealant or compound by forming voids or installing filler rods in the channel at the heel of jambs and head (do not leave voids in the sill channels) except as otherwise indicated, depending on light size, thickness and type of glass, and complying with manufacturer's recommendations.
- 5. Do not attempt to cut, seam, nip or abrade glass which is tempered, heat strengthened, or coated.
- 6. Force sealants into channel to eliminate voids and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.

- 7. Tool exposed surfaces of glazing liquids and compounds to provide a substantial "wash" away from the glass. Install pressurized tapes and gaskets to protrude slightly out of the channel, so as to eliminate dirt and moisture pockets.
- 8. Clean and trim excess glazing materials from the glass and stops and frames promptly after installation and eliminate stains and discolorations.
- 9. Where wedge-shaped gaskets are driven into one side of the channel to pressurize the sealant or gasket on the opposite side, provide adequate anchorage to ensure that gasket will not "walk" out when subjected to dynamic movement. Anchor gasket to stop with matching ribs, or by proven adhesives, including embedment of gasket tail in cured heel bead.
- Gasket Glazing: Miter cut, and bond ends together at corner, where gaskets are used for channel glazing, so that gaskets will not pull away from corners and result in voids or leaks in the glazing system.

3.3 CURE, PROTECTION AND CLEANING:

- A. Cure glazing sealants and compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability.
- B. Protect exterior glass from breakage immediately upon installation, by attachment of crossed streamers to framing held away from glass. Do not apply markers of any type to surfaces of glass.
- C. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during the construction period, including natural causes, accidents and vandalism.
- D. Maintain glass in a reasonably clean condition during construction, so that it will not be damaged by corrosive action and will not contribute (by wash-offs) to the deterioration of glazing materials and other work.
- E. Provide final glazing clean, when directed, prior to building/Project completion and final payment.

END OF SECTION 08 80 00

SECTION 08 91 20 - LOUVERS AND VENTS

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. Extruded aluminum louvers and screens.

1.3 RELATED WORK UNDER OTHER SECTIONS:

A. Division 07 Section "Joint Sealers".

1.4 QUALITY ASSURANCE:

- A. Comply with SMACNA (Sheet Metal and Air Conditioning Contractor's National Association) "Architectural Sheet Metal" recommendations for fabrication, construction details, and installation procedures except as otherwise indicated.
- B. Verify size, location and placement of louver units prior to fabrication. Coordinate field measurements and shop drawings with fabrication and shop assembly to minimize field adjustments, splicing, mechanical joints and field assembly of units. Preassemble units in as large sections as practicable.

1.5 SUBMITTALS:

- A. Product Data: For information only, submit copies of manufacturer's specifications, anchor details and installation instructions for fabrication of louvers, including finishing products.
- B. Shop Drawings: Submit shop drawings for the fabrication and erection of louver assemblies which are not completely shown by the manufacturer's data sheet. Include details of sections and connections at not less than 3" to 1'-0" scale. Show anchorage and accessory items.
- C. Samples: Submit a sample of each type of metal finish required. Prepare samples on metal of the same gauge and alloy to be used in the work. Samples will be reviewed for color and texture only. Compliance with all requirements is the exclusive responsibility of the Contractor.

PART 2 - PRODUCTS

2.1 MANUFACTURER:

- A. Basis of Design: Airolite, Model No. SCH401, as specified; or approved equal.
 - 1. Material: Extruded Aluminum, Alloy 6063-T5
 - 2. Louver Depth: 4" (101.6 mm); Blade: 0.081" (2.06 mm); Frame: 0.081" (2.06 mm)
 - 3. Test Standard: AMCA Standard 500-L
 - 4. Water Penetration Test: Wind-Driven Rain
 - a. Free Area 4 ft. x 4 ft. unit: 6.72 ft² (0.625 m²)
 - b. Percent Free Area: 42%
 - c. Beginning Point of Water Penetration: 1,250 fpm (6.35 m/s)
 - d. Air Volume Flow Rate at Beginning Point of Water Penetration: 8,400 cfm (3.96 m³/s)
 - e. Pressure Drop at Beginning Point of Water Penetration: 0.296 in. H₂O (0.07 kPa)
 - 5. Wind-Driven Rain Water Penetration Test:
 - a. Exterior Wind Velocity: 29 mph (13 m/s)
 - 1) Rainfall Rate: 3" (75 mm)/hr
 - 2) Effectiveness: 100.0%
 - 3) Core Ventilation: 295 fpm (1.5 m/s)
 - b. Exterior Wind Velocity: 50 mph (22 m/s)
 - 1) Rainfall Rate: 8" (200 mm)/hr
 - 2) Effectiveness: 99.1%
 - 3) Core Ventilation: 98 fpm (0.5 m/s)

2.2 MATERIALS:

A. Aluminum Extrusions: ASTM B 221, Alloy 6063-T52.

- B. Fastenings: Use the same material as items fabricated, unless otherwise indicated. Fasteners for exterior applications may be hot-dip galvanized, stainless steel or aluminum. Provide types, gauges and lengths to suit unit installation conditions. Use Phillips flat-head machine screws for exposed fasteners, unless otherwise indicated.
- C. Anchors and Inserts: Use non-ferrous metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.
- D. Bituminous Paint: SSPC-Paint 12 (cold-applied asphalt mastic).
- E. Lacquer: Clear methacrylate, as recommended by metal producer for finished metal protection.

2.3 EXTRUDED ALUMINUM LOUVERS:

A. Furnish extruded aluminum louvers of the depth and sizes indicated, and in accordance with the following schedule:

| | , | |
|-------|-------|--------|
| Depth | Frame | Blades |
| 2" | 0.062 | 0.050 |
| 4" | 0.081 | 0.081 |
| 6" | 0.125 | 0.125 |

Indicated Louver Thicknesses (Inches)

- B. Fabricate frames to suit adjacent construction.
- C. Assemble louvers and provide all supports, anchorages, and accessories for complete installation.
- D. Form blades and frames to the profiles, sizes and spacings indicated. If not indicated, form and space blades in accordance with the recommendations of SMACNA in the "Architectural Sheet Metal Manual". Overlap blades and "hook" both edges to prevent blow-through of water (stormproof/drainable). Form frame to provide tolerances for installation, with sealants in joints between louvers and adjoining work, as shown.
- E. Provide horizontal and vertical mullions where louver openings exceed 72" in any direction, unless otherwise indicated.
- F. Locate sills where shown, of the same material and thickness as louvers.
- G. Finish exposed-to-view aluminum surfaces as specified under "Shop Finishing".
- 2.4 LOUVER SCREENS:

- A. Provide removable screens for exterior louvers where indicated.
- B. Fabricate screen frames of the same metal and finish as the louver units to which secured, unless otherwise indicated.
- C. Provide rewireable frames consisting of formed or extruded metal with a driven spline or insert for securing screen mesh.
- D. Use insect screen of the following:
 - 1. 18 x 14 mesh, anodized aluminum wire.
- E. Use bird screen of the following:
 - 1. 1/2" square mesh, 0.064" anodized aluminum wire.
- F. Locate screens on inside face of louvers, unless otherwise shown. Secure screens to louver frames with machine screws, spaced at each corner and at 12" o.c. between.

2.5 SHOP FINISHING:

- A. General: Comply with NAAMM "Metal Finishes Manual" for finish designations and application recommendations, except as otherwise shown and specified.
- B. Protect chemical and electrolytic finishes on exposed surfaces by spraying with at least two coats of clear lacquer to a dry film thickness of not less than 0.5 mils, prior to shipment.
- C. Clear Anodized Aluminum Finish: Provide the following for aluminum sheet metal work indicated to receive clear anodized finish; as required to match Architect's sample.
 - 1. AA-M10C22A41 (0.7 mil min. thick, medium matte etched finish).

PART 3 - EXECUTION

3.1 INSPECTION:

- A. Examine the areas and conditions under which louvers and associated items are to be installed and do not proceed with the work until unsatisfactory conditions have been corrected.
- B. Do not install storefront framing until after wall opening has been properly and completely flashed at the head, jamb and sill by other trades.
 - 1. Install low-expansion polyurethane foam insulation around frame, concealed from view.

3.2 PREPARATION:

A. Coordinate setting drawings, diagrams, templates, instructions and directions for the installation of anchorages which are to be embedded in concrete or masonry construction. Coordinate the delivery of such items to the project site.

3.3 INSTALLATION:

- A. Locate and place louver units plumb, level and in proper alignment with adjacent work.
- B. Use concealed anchorages. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.
- C. Form tight joints with exposed connections accurately fit together. Provide reveals and openings for sealants and joint fillers, as indicated.
- D. Repair finishes damaged by cutting, welding, soldering and grinding operations required for fitting and jointing. Restore finishes and prime coats of paint so there is no evidence of corrective work. Return items, which cannot be refinished in the field, to the shop; make the required alterations, and refinish the entire unit, or provide new units, at Contractor's option.
- E. Protect galvanized and non-ferrous metal surfaces from corrosion or galvanic action by application of a heavy coating of bituminous paint on surfaces in contact with concrete, masonry or dissimilar metals.
- F. Provide concealed gaskets, flashings, joint fillers, and insulations, and install as the work progresses to make the installations weathertight.
- G. Refer to Division 7 for sealants in connection with the installation of louvers.

END OF SECTION 089120

SECTION 09 22 20 - NON-STRUCTURAL METAL FRAMING

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 DESCRIPTION OF WORK:

- A. The types of metal stud systems required include:
 - 1. Steel studs for non-load-bearing curtain walls.
 - 2. Screw-type steel studs for drywall work.
 - 3. Suspension system for interior gypsum board ceilings, soffits and grid systems.

1.3 RELATED WORK UNDER OTHER SECTIONS:

- A. Division 07 Section "Sound Attenuation Batts"
- B. Division 09 Section "Gypsum Board."

1.4 SUBMITTALS:

A. Product Data: For information only, submit copies of manufacturer's specifications and installation instructions for each type of metal stud and accessories including other data as may be required to show compliance with these specifications.

1.5 QUALITY ASSURANCE:

- A. U.L. Rated Assemblies: Where metal studs are components of assemblies indicated for a fire-resistance rating, including those required for compliance with governing regulations, provide studs identical with units, tested and shown in the applicable UL design of the "Fire Resistance Index" and Gypsum Association "GA-600" latest edition.
- B. Manufacturer: Provide steel studs, of the type(s) indicated, produced by one of the following:
 - 1. Punched-type non-load-bearing curtain wall studs:
 - a. Marino Corporation
 - b. Dietrich Industries
 - c. Certified members of the Steel Stud Manufacturers Association
 - 2. Screw-type light gauge drywall studs:
 - a. Marino Corporation
 - b. Dietrich Industries
 - c. Certified members of the Steel Stud Manufacturers Association

1.6 PRODUCT DELIVERY AND STORAGE:

A. Protect metal studs from rusting and damage. Deliver to the project site in manufacturer's unopened containers or bundles, fully identified with name, brand, type and grade. Store off the ground in a dry ventilated space.

PART 2 - PRODUCTS

2.1 GENERAL:

- A. Recycled Content of Steel Products: Post consumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Installation standard ASTM C 754.
- C. System Components: With each type of metal stud required, provide manufacturer's standard runners (tracks), shoes, clips, ties, stiffeners, fasteners, door jamb reinforcers and accessories as recommended by the manufacturer for the applications indicated, to provide a complete metal stud system.
- D. Punched Steel Non-Load-Bearing Studs: Manufacturer's standard formed steel studs of the height, depth, shape and gage indicated; and with the section modulus indicated, if any; with punched webs to facilitate erection of system and passage of mechanical/electrical service lines.
 - 1. Gage: As scheduled.
 - 2. Depth of Section: As shown.
 - 3. Steel: ASTM A 570, Grade D (40,000 psi yield strength).
 - 4. Finish: Hot-dip zinc coating complying with ASTM A 525, G90.
 - 5. Face of Flanges: Screw type (knurled to facilitate use of self-drilling tapping fasteners).
- E. Drywall Screw-Type Steel Studs: Manufacturer's standard formed light gauge steel studs complying with ASTM C 645, of the height, size, and gage indicated; with punched webs to facilitate erection of system and passage of mechanical/electrical service lines.
 - 1. Gage: 25 gage minimum, however, provide 20 gage studs in unbraced partitions over 10 feet in height, and at certain door jambs hereinafter specified.
 - 2. Provide 18 gage or heavier studs at walls indicated to receive Security Mesh.
 - 3. Depth of Section: As indicated.
 - 4. Flange Width: Not less than 1.25".
 - 5. Shape: "Cee" shape (returned flanges).
 - 6. Steel and Finish: ASTM A 591 Commercial Quality electrolytic zinc coated steel, Class B.
 - 7. Humid Exposures: Where studs are located in exterior walls, provide hot-dip zinc coating complying with ASTM A 525, G90.
 - 8. Face of Flanges: Screw-type (knurled to facilitate use of self-drilling tapping fasteners).

F. Recycled content:

- Target recycled content for Electric Arc Furnace Steel Products 64% post consumer / 30% post industrial
- 2. Target recycled content for Basic Oxygen Furnace Steel Products 21% post consumer / 8% post industrial
- G. Miscellaneous Metal Accessories: Provide 3/4" channels, 7/8" furring members or miscellaneous furring items, as indicated and required.
 - a. Configuration: Hat shaped.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. General:

- 1. Manufacturer's Instructions: Install metal stud systems in accordance with manufacturer's printed or written instructions and recommendations.
- 2. ANSI Standards: Comply with applicable requirements of ANSI A 42.3 and A 42.4, except where more detailed or more stringent requirements are indicated.
- 3. Gypsum Association Specifications: Comply with the requirements and recommendations of GA-203 latest edition "Installation of Screw-Type Steel Framing Members to Receive Gypsum board", where metal studs are indicated to receive gypsum board.
 - a. Coordinate requirements and recommendations with GA-600 latest edition for wall construction type and/or sound ratings.
- 4. ML/SFA Specifications: Comply with the requirements and recommendations of "Specifications for Metal Lathing and Furring" by the Metal Lath/Steel Framing Association, where metal studs are indicated to receive metal lath and plaster.
- 5. Runner Tracks: Install continuous tracks sized to match studs. Align tracks accurately to the layout at base and tops of studs. Secure tracks for the type of construction involved, except do not exceed 24" o.c. spacing for nail or power-driven fasteners, nor 16" o.c. for other types of attachment. Provide fasteners at corners and ends of tracks.
 - a. Isolation of Stud Systems from Structures: Where stud systems abut ceiling or deck construction or vertical structural elements, provide slip or cushion-type joint between stud system and structure to prevent the transfer of structural loads or movements to stud systems, unless otherwise shown.
- 6. Set studs plumb, except as needed for diagonal bracing or required for non-plumb walls or warped surfaces and similar requirements.
- 7. Where stud system abuts structural columns or walls, including masonry walls, anchor ends of stiffeners to supporting structure.
- 8. Where wire-tying is indicated for assembly of stud system components, tie with either single 16 gage or double 18 gage wire except as otherwise indicated. Wrap to form either saddle-tie or figure-eight, depending upon type of member intersection.
- 9. Install supplementary framing, blocking and bracing in the metal stud system where walls or partitions are indicated to support fixtures, equipment, services, casework, heavy trim and furnishings and similar work requiring attachment to the wall or partition. Where type of supplementary support is not indicated, comply with the stud manufacturer's recommendations and industry standards in each case, considering the weight or loading resulting from the item supported. In addition, provide horizontal bracing in all partitions 8'-0" high or greater, whether or not required by the stud manufacturer.
- 10. Height of Partition Stud Systems: Terminate top of all partitions at underside of construction above, unless shown otherwise.
- 11. Stud Spacing: Space studs at 16" o.c., maximum, install studs so flanges within framing system, point in same direction.

- B. Installation of Exterior Curtain Wall Stud System:
 - Secure studs to top and bottom runner tracks by either welding or screw fastening at both inside and outside flanges, or provide manufacturer's special stud shoes or clips for stud anchorage.
 - 2. Frame wall openings larger than 2'-0" square with double stud at each jamb of frame except where more than two are either shown or indicated in manufacturer's instructions. Install runner tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with stud shoes or by welding, and space jack studs same as full-height studs of the wall. Install at least one stiffener above and below each wall opening, not more than 6" above head and 6" below sill. Extend stiffeners to not less than 2 regular studs each side of jamb studs, and weld or wire-tie to each stud and jack stud intersected. Secure stud system all around to wall opening frame in the manner indicated.
 - 3. Frame both sides of expansion and control joints, as shown for the wall system, with a separate stud and do not bridge the joint with components of the stud system.
- C. Installation of Stud System to Receive Gypsum Board:
 - 1. Runner Tracks: At partition corners and intersections, butt runner tracks, except leave clearance where base course of gypsum board is to run through.
 - 2. Friction fit studs to runner tracks by positioning and rotating into place. Provide positive attachment to tracks for studs located at partition corners and intersections, and adjacent to openings, and for jack studs located above and below openings. Attach with either self-tapping screws or by use of clinching tool, at both flanges of stud.
 - 3. At partition corners and intersections, provide a minimum of 3 studs, positioned to support each surface of partition; or provide 2 studs with the second stud installed after the base course of gypsum board has been run through, and screw anchor the second stud through the gypsum board to the first stud at 2' o.c. spacing.
 - 4. Install full length studs between runner tracks wherever possible. If necessary, splice studs by nesting with a minimum lap of 8" and fasten laps with 2 screws through each flange.
 - 5. Frame door openings with vertical studs securely attached to each jamb of door frame. On head of door frame install runner track; cut flanges at ends, bend web 90 degrees and screw attach to jamb studs. Install jack studs over door opening, spaced same as full-height studs. Where control joints are shown to extend upward from door jambs, install an unattached cripple stud spaced 1/2" from jamb or strut stud(s). Space next full-height stud not more than 6" from jamb or strut stud(s).
 - a. Provide jamb stud(s) at swing/hinged-door openings as follows:
 - 1) Door widths up to 4'-0" 2-25 gage or 1-20 gage
 - 2) Door opening in excess of 4' 2-20 gage
 - b. Attach jamb studs to metal door frames with metal clips, each with two screws into iamb stud.
 - Frame openings other than door openings in the same manner as required for door openings, and install framing below sills of openings to match framing required above door heads.
 - 7. Frame both sides of expansion and control joints as shown for the partition system, with a separate stud and do not bridge the joint with components of the stud system.
- D. Installation of Suspension Stud System to Receive Gypsum Board:
 - 1. Install suspension system components according to spacings indicated, but not greater than spacings required by reference installation standards for assembly types.
 - 2. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.
 - 3. Suspend hangers from building structure as follows:
 - a. 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.

- Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
- b. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
- c. Do not attach hangers to steel roof deck.
- d. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
- e. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
- f. Do not connect or suspend steel framing from ducts, pipes, or conduit.
- 4. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.
- 5. Seismic Bracing: Sway-brace suspension systems with hangers used for support at 8'-0" o.c. each way.
- 6. 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.

E. Z-Furring Members:

- 1. Erect insulation, specified in Division 07 Section "Thermal Insulation," vertically and hold in place with Z-furring members spaces 24 inches 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 power-driven fasteners spaced 24 inches 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 from corner and cut insulation to fit.

END OF SECTION 09 22 20

SECTION 092650 - GYPSUM VENEER PLASTERING

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. Gypsum veneer plaster and gypsum base for veneer plaster.
- 2. Gypsum veneer plaster over masonry surfaces.

B. Related Requirements:

1. Division 09 Section "Non-Structural Metal Framing" for non-load-bearing steel framing.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings:
 - 1. Show locations, fabrication, and installation of control joints, reveals, and trim; include plans, elevations, sections, details of components, and attachments to other work.
- C. Samples: For the following products:
 - 1. Trim Accessories: Full-size Sample in 10-inch (250-mm) length for each trim accessory.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages, containers, and bundles bearing brand name and identification of manufacturer or supplier.
- B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes.
- C. Stack panels flat on leveled supports off floor or slab to prevent sagging.

1.5 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C 843 requirements or gypsum veneer plaster manufacturer's written recommendations, whichever are more stringent.

- B. Room Temperatures: Maintain not less than 55 deg F (13 deg C) or more than 80 deg F (27 deg C) for seven days before application of [gypsum base and gypsum veneer plaster, continuously during application, and after application until veneer plaster is dry.
- C. Avoid conditions that result in gypsum veneer plaster drying too rapidly.
 - 1. Distribute heat evenly; prevent concentrated or uneven heat on veneer plaster.
 - 2. Maintain relative humidity levels, for prevailing ambient temperature, that produce normal drying conditions.
 - 3. Ventilate building spaces in a manner that prevents drafts of air from contacting surfaces during veneer plaster application until it is dry.
- D. Do not install panels that are wet, moisture damaged, or mold damaged.
 - 1. Indications that panels are wet, or moisture damaged include, but are not limited to, discoloration, sagging, and irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain gypsum veneer plaster products, including gypsum base for veneer plaster, joint reinforcing tape, and embedding material, from single manufacturer.

2.2 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 E 119 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 E 90 and classified according to ASTM E 413 by an independent testing agency.
- C. Low-Emitting Materials: For ceiling and wall assemblies, provide materials and construction identical to those tested in assembly and complying with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.3 GYPSUM VENEER PLASTER

A. High-Strength, One-Component Gypsum Veneer Plaster: ASTM C 587, ready-mixed, smooth, finish-coat veneer plaster containing mill-mixed, fine silica sand; with a compressive strength of 3000 psi (20 MPa) when tested according to ASTM C 472; and formulated for application directly over substrate without use of separate base-coat material.

- 1. Products: Subject to compliance with requirements. Available products that may be incorporated into the work (or equivalent to the following):
 - a. USG Corporation: Imperial Plaster
 - 1) Smooth Finish Coat: Diamond Interior Finish Plaster.

2.4 PANEL PRODUCTS

- A. Gypsum Base for Veneer Plaster, Type X: ASTM C 1396/C 1396M.
 - 1. Products: Subject to compliance with requirements, provide the following available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. CertainTeed Corp.; ProRoc Veneer Plaster Base, Type X.
 - b. Georgia-Pacific Gypsum LLC, Subsidiary of Georgia Pacific; Tough Rock Fireguard Veneer Plaster Base.
 - c. National Gypsum Company; Kal-Core Fire-Shield, Type X.
 - d. USG Corporation; Imperial Firecode Gypsum Base.
 - 2. Thickness: 5/8 inch (15.9 mm)
- B. Glass-Mat Interior Gypsum Board: ASTM C 1658/C 1658M. With moisture- and mold-resistant core; glass-mat facing on both sides of panel.
 - 1. Products: Subject to compliance with requirements, provide the following available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Georgia-Pacific Gypsum LLC, Subsidiary of Georgia Pacific; DensArmor Plus Interior Panel.
 - b. USG Mold Tough
 - c. National Gypsum Gold Bond
 - 2. Thickness: 5/8 inch (15.9 mm).
 - 3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.5 TRIM ACCESSORIES

- A. Standard Trim: ASTM C 1047 provided or approved by manufacturer for use in gypsum veneer plaster applications indicated.
 - 1. Material: Galvanized-steel sheet or aluminum-coated steel sheet; rolled zinc, plastic, or paper-faced galvanized-steel sheet, Galvanized-steel sheet or aluminum-coated steel sheet or rolled zinc, Plastic, Paper-faced, galvanized-steel sheet.
 - 2. Shapes:
 - a. Cornerbead.
- B. Aluminum Trim: Extruded accessories of profiles and dimensions indicated.

- 1. Manufacturers: Subject to compliance with requirements, provide products by the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Fry Reglet Corporation.
 - b. Gordon Inc.
 - c. Pittcon Industries.
- 2. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B 221 (ASTM B 221M), Alloy 6063-T5.
- 3. Finish: Corrosion-resistant primer compatible with veneer plaster

2.6 JOINT REINFORCING MATERIALS

- A. General: Comply with joint strength requirements in ASTM C 587 and with gypsum veneer plaster manufacturer's written recommendations for each application indicated.
- B. Joint Tape:
 - Gypsum Base for Veneer Plaster: As recommended by gypsum veneer plaster manufacturer for applications indicated.
- C. Embedding Material for Joint Tape:
 - Gypsum Base for Veneer Plaster: As recommended by gypsum veneer plaster manufacturer for use with joint-tape material and gypsum veneer plaster applications indicated.

2.7 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced product standards and manufacturer's written recommendations.
- B. Steel Drill Screws: ASTM C 1002 unless otherwise indicated.
 - 1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.
- C. Sound Attenuation Blankets: ASTM C 665, 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.
- D. Acoustical Joint Sealant: Manufacturer's standard non-sag, paintable, nonstaining latex sealant complying with ASTM C 843. The 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.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, or mold damaged.

3.2 PREPARATION

- A. Masonry Substrates: Prepare according to gypsum veneer plaster manufacturer's written recommendations and as follows:
 - 1. Clean surfaces to remove dirt, grease, oil, and other foreign matter and deposits that could impair bond with gypsum veneer plaster.
 - 2. Apply bonding agent on dry masonry substrates.

3.3 INSTALLING PANELS, GENERAL

- A. Gypsum Base for Veneer Plaster: Apply according to ASTM C 844 unless manufacturer's written recommendations are more stringent.
 - 1. Do not allow gypsum base to degrade from exposure to sunlight, as evidenced by fading of paper facing.
 - 2. Erection Tolerance: No more than 1/16-inch (1.6-mm) offsets between planes of gypsum base panels, and 1/8 inch in 8 feet (3 mm in 2.4 m) noncumulative, for level, plumb, warp, and bow.
- B. Install sound attenuation blankets before installing gypsum base for veneer plaster.
- C. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- D. Install panels with face side out. Butt the panels together for a light contact at edges and ends with not more than 1/16 inch (1.6 mm) of open space between panels. Do not force it into place.
- E. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or 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 locate joints, other than control joints, at corners of framed openings.
- F. Attach panels to steel studs so the leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- G. Attach panels to framing provided at openings and cutouts.
- H. Form control joints with space between edges of adjoining panels.

- Cover both sides of partition framing with panels in concealed spaces, including above ceilings, except in internally braced chases.
 - 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. (0.74 sq. m) in area.
 - 2. Fit panels around ducts, pipes, and conduits.
 - 3. Where partitions intersect open concrete coffers, concrete joists, and other structural members projecting below underside of floor/roof slabs and decks, cut panels to fit profile formed by coffers, joists, and other structural members; allow 1/4- to 3/8-inch- (6.4- to 9.5-mm-) wide joints; seal joints with acoustical sealant.
- J. 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.
- K. Fastener Spacing: Comply with ASTM C 844, manufacturer's written recommendations, and fire-resistance-rating requirements.
 - 1. Space screws a maximum of 12 inches (305 mm) o.c. along framing members for wall or ceiling application.

3.4 INSTALLING PANELS

- A. Install panels for veneer plaster in locations indicated on Drawings.
- B. Single-Layer Application:
 - On walls, apply gypsum base panels vertically and parallel, horizontally and perpendicular 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.
 - 2. On Z-furring, apply gypsum base panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
- C. Fasteners: Drive fasteners flush with gypsum base surface. Do not overdrive fasteners or cause surface depressions.
- D. Single-Layer Fastening Methods: Apply gypsum base panels to support steel drill screws.

3.5 INSTALLING TRIM ACCESSORIES

- A. General: Install trim with back flanges intended for fasteners and attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Trim: Install in the following locations:

1. Cornerbead: Use at outside corners.

3.6 INSTALLING JOINT REINFORCEMENT

- A. Gypsum Base: Reinforce interior angles and flat joints with joint tape and embedding material to comply with ASTM C 843 and with gypsum veneer plaster manufacturer's written recommendations.
- B. Glass-Mat Interior Gypsum Board: Reinforce joints between moisture- and mold-resistant panels with joint tape and embedding material according to panel manufacturer's written recommendations.

3.7 GYPSUM VENEER PLASTERING

- A. Bonding Agent: Apply bonding agent on dry exposed masonry (where patching ceiling) according to gypsum veneer plaster manufacturer's written recommendations.
- B. Gypsum Veneer Plaster Mixing: Mechanically mix gypsum veneer plaster materials to comply with ASTM C 843 and with gypsum veneer plaster manufacturer's written recommendations.
- C. Gypsum Veneer Plaster Application: Comply with ASTM C 843 and with veneer plaster manufacturer's written recommendations.
 - 1. One-Component Gypsum Veneer Plaster: Trowel apply base coat over substrate to uniform thickness. Fill all voids and imperfections. Immediately double back with same mixer batch of plaster to a uniform total thickness of 1/16 to 3/32 inch (1.6 to 2.4 mm).
 - 2. Do not apply veneer plaster to gypsum base if paper facing has degraded from exposure to sunlight. Before applying veneer plaster, use remedial methods to restore bonding capability to degraded paper facing according to manufacturer's written recommendations and as approved by Architect.

3.8 PROTECTION

- A. Protect installed gypsum veneer plaster from damage from weather, condensation, construction, and other causes during remainder of the construction period.
- B. Remove and replace gypsum veneer plaster and gypsum base panels that are wet, moisture damaged, or mold damaged.
 - 1. Indications that gypsum base panels are wet, or moisture damaged include, but are not limited to, discoloration, sagging, and irregular shape.
 - 2. Indications that gypsum base panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092650

SECTION 09 29 00 - GYPSUM BOARD

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.
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM C 840 Standard Specification for Application and Finishing of Gypsum Board
- C. Gypsum Association (GA)
 - 1. GA-216 Application and Finishing of Gypsum Board

1.2 SUMMARY

- A. Section Includes:
 - 1. Interior gypsum board.
- B. Related Requirements:
 - 1. Division 07 Section "Sound Attenuation Batts"

1.3 ACTION SUBMITTALS

- A. Product Data: For information only, submit copies of manufacturer's product specifications and installation instructions for each gypsum drywall component, including other data as may be required to show compliance with these specifications.
- B. Submittals: Shall indicate compliance with the International Green Construction Code 2012:
 - 1. Products: Products and materials are required to comply with the requirements stated in the IGCC 2012 Chapter 5 Material Resource Conservation. Include a statement indicating that the product is in compliance and submit the appropriate documentation.
- C. Certification: Submit certification that proposed materials conform to the Fire Test Data of ASTM E 84.
- D. Samples: For the following products:
 - 1. Trim Accessories: Full-size Sample in 12-inch- (300-mm-) long length for each trim accessory indicated.

1.4 QUALITY ASSURANCE

A. Fire-Resistance Rating: Where work is indicated for fire-resistance ratings, including those required to comply with governing regulations, provide materials and installations identical with applicable assemblies tested and listed by recognized authorities, including U.L. and A.I.A.

- B. Industry Standard: Comply with applicable requirements of GA-216 "Application and Finishing of Gypsum Board" by the Gypsum Association, except where more detailed or more stringent requirements are indicated including the recommendations of the manufacturer.
- C. Allowable Tolerances: 1/8" offsets between planes of board faces, and 1/4" in 8'-0" for plumb, level, warp and bow.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver gypsum drywall materials in sealed containers and bundles, fully identified with manufacturer's name, brand, type and grade Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers off the ground on a flat platform to prevent sagging.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 and GA-216 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
- B. Examine the substrates and the spaces to receive gypsum drywall, and the conditions under which gypsum drywall is to be installed; and do not proceed with the installation until unsatisfactory conditions have been corrected.
- C. Maintain ambient temperatures at not less than 55 degrees F., for the period of 24 hours before drywall finishing, during installation and until compounds are dry.
- D. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.
- E. Do not install panels that are wet, those that are moisture damaged, and those that are 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.

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 E 119 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 E 90 and classified according to ASTM E 413 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

- A. Recycled Content of Gypsum Panel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 20 percent.
- B. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with the support system indicated.

2.3 INTERIOR GYPSUM BOARD

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. American Gypsum.
 - 2. CertainTeed Corp.
 - 3. Georgia-Pacific Gypsum LLC.
 - 4. National Gypsum Company.
 - 5. USG Corporation.
- B. General: Comply with GA-216 ASTM C 1396/C 1396M.
- C. Gypsum Board, Type X: ASTM C 1396/C 1396M.
 - 1. Thickness: 5/8 inch (15.9 mm).
 - 2. Long Edges: Tapered.
- D. Moisture- and Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces.
 - 1. Core: As indicated, 5/8 inch (15.9 mm), Type X, unless otherwise noted.
 - 2. Long Edges: Tapered.
 - 3. Mold Resistance: ASTM D 3273, score of 10.

2.4 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.
 - Material: Galvanized steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet.
 - 2. Shapes:
 - a. Corner bead.
 - b. Bullnose bead.
 - c. Casing bead / 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 corner bead: With notched or flexible flanges.

2.5 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- 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.
 - 4. Tile Backing Panels: As recommended by panel manufacturer.
- 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, rounded edges, 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 drying-type, all-purpose compound.
 - a. Use setting-type compound for installing paper-faced metal trim accessories.
 - 3. Fill Coat: For the second coat, use drying-type, all-purpose compound.
 - 4. Finish Coat: For the third coat, use drying-type, all-purpose compound.
 - 5. Skim Coat: For the final coat of Level 5 finish, use high-build interior coating product designed for application by airless sprayer and to be used instead of skim coat to produce Level 5 finish.

2.6 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Expansion Joints: Rigid vinyl, 1-1/2" wide, 10' lengths, with removable flexible vinyl strip.
- C. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
 - 1. Laminating adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- D. Steel Drill Screws: ASTM C 1002. unless otherwise indicated.
 - 1. Use screws complying with ASTM C 954 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.
- E. Sound Attenuation Blankets: As specified in Division 07 Section "Sound Attenuation Batts."

F. Acoustical Joint Sealant: Manufacturer's standard non-sag, paintable, non-staining latex sealant complying with ASTM C 834. The 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. Pecora Corporation; AC-20 FTR.
 - d. Specified Technologies, Inc. Smoke N Sound Acoustical Sealant.
 - e. 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).

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 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 panels with face side out. Butt the panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force it into place.
- C. 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.
- D. Form control and expansion joints with space between edges of adjoining gypsum panels. Control joints to be installed minimum 24'-0" o.c. until noted otherwise.
- E. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
 - 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. (0.7 sq. m) 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- inches- (6.4- to 9.5-mm-) wide joints to install sealant.
- F. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2- inches- (6.4- to 12.7-mm-) 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.
- G. Attachment to Steel Framing: Attach panels so the leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- H. 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.
- I. 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: As indicated on Drawings.
 - 2. Type X: As indicated on Drawings.
 - 3. Moisture- and Mold-Resistant Type: At all new plumbing locations (new and existing walls) and as indicated on Drawings.
 - 4. Type X: Where required for specific fire-resistance-rated assembly indicated.

B. Single-Layer Application:

- 1. 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.
- 2. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
- 3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

3.4 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. Corner bead: Use at outside corners.
 - 2. Bullnose Bead: Use where indicated.
 - 3. LC-Bead: Use at exposed panel edges.
 - 4. L-Bead: Use where indicated.
 - 5. U-Bead: Use at exposed panel edges.
 - 6. Curved-Edge corner bead: Use at curved openings.

3.5 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, rounded or beveled edges, 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: Drywall finishing to be installed in accordance with Gypsum Association "Recommended Levels of Gypsum Board Finish, #GA-214-M-97" and ASTM C 840.
 - 1. Level #0
 - a. For use in areas of temporary construction
 - b. No taping, finishing or accessories.
 - 2. Level #1
 - a. In areas above ceilings and areas not exposed to public view. Tape and fastener heads need not be covered with joint compound.
 - b. Tape, set in joint compound at joints and interior angles.
 - c. Finish surface to be free of excess compound. Some tool marks and ridges are acceptable.
 - 3. Level #4
 - a. Use in areas to receive flat paint, light texture finish, or light-duty wall covering.
 - b. At joints: Taped as "Level #2" then covered with two separate coats of joint compound.
 - c. At interior angles: Taped as "Level #2" then covered with one separate coat of joint compound.
 - d. At accessories and fasteners: Cover with three separate coats of joint compound.
 - e. Surface to be smooth and free of all ridges and tool marks.
 - 4. Level #5: Typical at interior walls unless noted otherwise.
 - a. Primer and its application to surfaces are specified in other Division 09 Sections.

3.6 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove them 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 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.

END OF SECTION 09 29 00

SECTION 09 30 00

TILING

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. Wall tile
- B. Related Sections:
 - 1. Division 09 Section "Gypsum Board."

1.3 DEFINITIONS

- A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in "American National Standard Specifications for Installation of Ceramic Tile."
- C. Module Size: Actual tile size plus joint width indicated.
- D. Face Size: Actual tile size, excluding spacer lugs.

1.4 PERFORMANCE REQUIREMENTS

- A. Static Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per ASTM C 1028:
 - 1. Level Surfaces: Minimum 0.60 minimum.
 - 2. Step Treads: Minimum 0.60 minimum.
 - 3. Ramp Surfaces: Minimum 0.80 minimum.

1.5 ACTION SUBMITTALS

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

B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.

- C. Samples for Initial Selection: For each type of tile and grout indicated. Include Samples of accessories involving color selection.
- D. Samples for Verification:
 - 1. Full-size units of each type and composition of tile and for each color and finish required. For ceramic mosaic tile in color blend patterns, provide full sheets of each color blend.
 - 2. Assembled samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required. Make samples at least 12 inches (300 mm) square, but not fewer than 4 tiles. Use grout of type and in color or colors approved for completed Work.
 - 3. Full-size units of each type of trim and accessory for each color and finish required.
 - 4. Stone thresholds in 6-inch (150-mm) lengths.
 - 5. Metal edge strips in 6-inch (150-mm) lengths.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.
- C. Product Certificates: For each type of product, signed by product manufacturer.
- D. Material Test Reports: For each tile-setting and -grouting product.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match and are from the same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.
 - 2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

1.8 QUALITY ASSURANCE

- A. Source Limitations for Tile: Obtain tile of each type and color or finish, color and type from one source or producer.
 - 1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.
- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from one manufacturer and each aggregate from one source or producer.
- C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer for each product:

- 1. Joint sealants.
- D. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained, and contamination can be avoided.
- D. Store liquid materials in unopened containers and protect them from freezing.
- E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.10 PROJECT CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
 - 1. Provide tile complying with Standard grade requirements unless otherwise indicated.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCA installation methods specified in tile installation schedules, and other requirements specified.
- C. Low-Emitting Materials: Tile flooring systems shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- D. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.
- E. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.

1. Where tile is indicated for installation in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.

F. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.2 TILE PRODUCTS

- A. Tile Type (Wall Tile)
 - 1. Basis-of-Design Product:

Provide wall tile by one of the following:

- a. Porcelanosa Grupo, Nubula, Dubai or Wall Mosiacs
- b. Tilebar. Kinro Garden or Portmore wall tile
- c. L'Antic Colonial wall tile
- d. Stonesource Siena Adobe wall tile
- 2. Composition: Impervious natural clay or porcelain, .
- 3. Module Size: As selected by Architect by manufacturer product line
- 4. Thickness: 1/4 inch (6.35 mm).
- 5. Face: Pattern of design indicated, with cushion edges.
- 6. Surface: As selected by Architect
- 7. Finish: Glaze as provided by manufacturers' standard product line.
- 8. Tile Color and Pattern: As selected by Architect from manufacturer's full range.
- 9. Grout Color: As selected by Architect from manufacturer's full range.
 - a. Internal Corners: Field-butted square corners. For coved base and cap, use angle pieces designed to fit with stretcher shapes.
 - b. Tapered Transition Tile: Shape designed to effect transition between thickness of tile floor and adjoining floor finishes of different thickness, tapered to provide reduction in thickness from 1/2 to 1/4-inch (12.7 to 6.35 mm) across nominal 4-inch (100-mm) dimension.

2.3 TILE BACKING PANELS

- A. Cementitious Backer Units: ANSI A118.9 or ASTM C 1325, in maximum lengths available to minimize end-to-end butt joints.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. C-Cure; C-Cure Board 990.
 - b. Custom Building Products; Wonderboard.
 - c. FinPan, Inc.; Util-A-Crete Concrete Backer Board.
 - d. USG Corporation; DUROCK Cement Board.
 - 2. Thickness: 1/2 inch or as indicated.

2.4 SETTING MATERIALS

- A. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. Boiardi Products; a QEP company.
 - Bonsal American; an Oldcastle company.
 - c. Bostik, Inc.
 - d. C-Cure.

- e. Custom Building Products.
- f. Jamo Inc.
- g. Laticrete International, Inc.
- h. MAPEI Corporation.
- i. Mer-Kote Products, Inc.
- j. Southern Grouts & Mortars, Inc.
- k. Summitville Tiles, Inc.
- I. TEC; a subsidiary of H. B. Fuller Company.
- 2. Provide prepackaged, dry-mortar mix containing dry, re-dispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
- 3. Provide prepackaged, dry-mortar mix combined with acrylic resin or styrene-butadiene-rubber liquid-latex additive at Project site.
- 4. For wall applications, provide mortar that complies with requirements for non-sagging mortar in addition to the other requirements in ANSI A118.4.

2.5 GROUT MATERIALS

- A. Water-Cleanable Epoxy Grout: ANSI A118.3, with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. Atlas Minerals & Chemicals, Inc.
 - b. Boiardi Products; a QEP company.
 - c. Bonsal American; an Oldcastle company.
 - d. Bostik, Inc.
 - e. C-Cure.
 - f. Custom Building Products.
 - g. Jamo Inc
 - h. Laticrete International, Inc.
 - i. MAPEI Corporation.
 - j. Mer-Kote Products, Inc.
 - k. Southern Grouts & Mortars, Inc.
 - I. Summitville Tiles, Inc.
 - m. TEC; a subsidiary of H. B. Fuller Company.
 - 2. Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 deg F (60 deg C) and 212 deg F (100 deg C), respectively, and certified by manufacturer for intended use.

2.6 ELASTOMERIC SEALANTS

- A. General: Provide sealants, primers, backer rods, and other sealant accessories that comply with the following requirements and with the applicable requirements in Division 07 Section "Joint Sealants."
 - 1. Sealants shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 2. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
 - 3. Use primers, backer rods, and sealant accessories recommended by sealant manufacturer.
- B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints unless otherwise indicated.

2.7 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, Portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

- B. Temporary Protective Coating: Either product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar, and grout products; and easily removable after grouting is completed without damaging grout or tile.
 - 1. Petroleum paraffin wax, fully refined and odorless, containing at least 0.5 percent oil with a melting point of 120 to 140 deg F (49 to 60 deg C) per ASTM D 87.
 - 2. Grout release in form of manufacturer's standard proprietary liquid coating that is specially formulated and recommended for use as temporary protective coating for tile.
- C. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

2.8 MIXING MORTARS AND GROUT

- Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.
- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
 - 1. Verify that substrates for setting tile are firm, dry, clean, free of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
 - Verify that concrete substrates for tile floors installed with adhesives, bonded mortar bed or thinset mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.
 - a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
 - b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
 - 3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
 - 4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with adhesives or thin-set mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.
- B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot (1:50) toward drains.
- C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not, factory blended, either return to manufacturer or blend tiles at Project site before installing.
- D. Field-Applied Temporary Protective Coating: If indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.3 TILE INSTALLATION

- A. Comply with TCA's "Handbook for Ceramic Tile Installation" for TCA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in TCA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
 - 1. For the following installations, follow procedures in the ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:
- B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate the work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
- E. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
 - 1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
 - 2. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
 - 3. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.
- F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
 - 1. Ceramic Mosaic Tile: 1/16 inch (1.6 mm).
 - 2. Glazed Wall Tile: 1/16 inch (1.6 mm).
 - 3. Decorative Thin Wall Tile: 1/16 inch (1.6 mm).
- G. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.

3.4 TILE BACKING PANEL INSTALLATION (when required)

A. Install cementitious backer units and fiber-cement underlayment and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. Use latex-Portland cement mortar for bonding material unless otherwise directed in manufacturer's written instructions.

3.5 WATERPROOFING INSTALLATION (when required)

- A. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness and bonded securely to substrate.
- B. Do not install tile or setting materials over waterproofing until waterproofing has been cured and been tested to determine that it is watertight.

3.6 CLEANING AND PROTECTING

- A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 - 1. Remove epoxy grout residue from tile as soon as possible.
 - 2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
 - 3. Remove temporary protective coating by method recommended by coating manufacturer and that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent drain clogging.
- B. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.
- C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
- D. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.7 INTERIOR TILE INSTALLATION SCHEDULE

- A. Interior Wall Installations, Metal Studs or Furring:
 - 1. Tile Installation W245: Thin-set mortar on coated glass-mat, water-resistant gypsum backer board; TCA W245.
 - a. Tile Type: as selected by Architect
 - b. Thin-Set Mortar: Dry-set or Latex Portland cement mortar.
 - c. Grout: Water-cleanable epoxy grout.

END OF SECTION

SECTION 09 51 10 - 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. Section Includes:

- 1. Acoustical tiles for ceilings.
- 2. Concealed suspension systems.
- B. Related Requirements:
 - Division 21-28 for light fixtures, sprinklers and air distribution components.
- C. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified, 6-inches- (150-mm-) in size.
- C. Samples for Initial Selection: For components with factory-applied color finishes.
- D. 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 full-size Samples of each type, color, pattern, and texture.
 - 2. Exposed Moldings and Trim: Set of 6-inch- (150-mm-) long Samples of each type and color.

1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 - 1. Ceiling suspension-system members.
 - 2. Method of attaching hangers to building structure.
 - a. Furnish layouts for cast-in-place anchors, clips, and other ceiling attachment devices whose installation is specified in other Sections.

- 3. Size and location of initial access modules for acoustical tile.
- 4. Ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.
- 5. Minimum Drawing Scale: 1/8 inch = 1 foot (1:96).
- B. Product Test Reports: For each acoustical tile ceiling, for tests performed by manufacturer and witnessed by a qualified testing agency.
- C. Evaluation Reports: For each acoustical tile ceiling suspension system and anchor and fastener type, from ICC-ES.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For finishes to include in maintenance manuals.

1.6 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. Acoustical Ceiling Units: Full-size tiles equal to 2 percent of quantity installed.
 - 2. Suspension-System Components: Quantity of each concealed grid and exposed component equal to 2 percent of quantity installed.

1.7 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 stabilize moisture content.
- C. Handle acoustical tiles carefully to avoid chipping edges or damaging units in any way.

1.8 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 stabilize moisture content.
- C. Handle acoustical tiles carefully to avoid chipping edges or damaging units in any way.

1.9 ACOUSTICAL TILES, GENERAL

- A. Source Limitations:
 - 1. Acoustical Ceiling Tile: Obtain each type from single source from single manufacturer.
 - 2. Suspension System: Obtain each type from a single source from a single manufacturer.
- B. Source Limitations: Obtain each type of acoustical ceiling tile and supporting suspension system from single source from single manufacturer.
- C. 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.
- D. 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.

1.10 ACOUSTICAL TILES

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or if not indicated provide Calla High NRC (0.90 NRC minimum) tegular 24" x 24" x 1.75" thick at 1.1 lbs/sf, by Armstrong World Industries. Comparable product acceptable by one of the following:
 - 1. CertainTeed Corp.
 - 2. USG Interiors, Inc.; Subsidiary of USG Corporation.
 - 3. Rockfon North America
- B. Color: submit for approval.
- 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.

1.11 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/C 635M as applicable to the type of suspension system required for the type of ceiling units indicated. Coordinate with other work supported by or penetrating through the ceilings, including light fixtures, HVAC equipment, and partition system (if any).

- B. Attachment Devices: Size for five times the design load indicated in ASTM C 635/C 635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
 - Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing according to ASTM E 1190, conducted by a qualified testing and inspecting agency.
- C. 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 three times hanger design load (ASTM C 635/C 635M, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 12 gauge diameter wire.
- D. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.
- E. 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.

1.12 METAL SUSPENSION SYSTEM

- A. Basis-of-Design Product: Armstrong World Industries. Subject to compliance with requirements, provide same as acoustical ceiling manufacturer or comparable product by one of the following:
 - 1. CertainTeed Corp.
 - 2. USG Interiors, Inc.; Subsidiary of USG Corporation.
 - 3. Rockfon North America
- B. Type of System: Either Direct-Hung, Double-Web Suspension System or Indirect Hung Suspension System (as Contractor's option): Main and cross runners roll formed from and capped with cold-rolled steel sheet, pre-painted, 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. Indirect-Hung Suspension System, conform to the following:
 - a. Carrying Channels: 1-1/2" steel channels, hot-rolled or cold-rolled, not less than 0.475 lbs. per lin. Ft.
- C. Exposed Suspension System: Manufacturer's standard exposed runners, cross-runners and accessories, of the types and profiles indicated, with exposed cross-runners coped to lay flush with main runners.
 - 1. Finish of Exposed Members: Provide uniform factory-applied finish on exposed surfaces of ceiling suspension system including moldings, trim and accessories.
 - 2. Finish: Manufacturer's standard baked enamel finish, white unless otherwise selected by Architect.

1.13 METAL EDGE MOLDINGS AND TRIM

A. Edge Moldings: Provide manufacturer standard angle moldings; in finish to match exposed system. Provide manufacturer's standard angle moldings in finish to match exposed system.

1.14 ACOUSTICAL SEALANT

A. Acoustical Sealant: A heavy-bodied, non-shrinking, non-drying, non-sag, grade mastic compound intended for interior sealing of concealed construction joints.

PART 2 - EXECUTION

2.1 EXAMINATION AND PREPARATION WORK

- 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 for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine acoustical tiles before installation. Reject acoustical tiles that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Verify that layout of hangers will not interfere with other work; make adjustments in layout as necessary.
- E. Do not begin ceiling installation until the services above ceiling are complete except for final
- F. Notify Architect of unsatisfactory conditions before proceeding.
- G. 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.
- H. Locate system on room axis according to reflected ceiling plan.

2.2 INSTALLATION OF CEILING TILES

- A. General: Install acoustical panel ceilings to comply with ASTM C 636/C 636M and seismic design requirements indicated, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
- B. Install acoustical panels in accordance with manufacturer's written instructions.
- C. Lay panels flat into the tee grid. Scribe and cut panels for accurate fit at perimeter and around penetrations.

- D. Hold tile field in compression when performing cuts.
- E. Install acoustical panels after the above-ceiling work is complete. Install panels level, in uniform plane, and free from warp, twists, and dents.
- F. Installation Tolerance: Maximum variation from flat and level surface is 1:360.

2.3 INSTALLATION OF SUSPENSION SYSTEM

A. General:

- 1. Conform to the requirements of CISCA (AC) Acoustical Ceilings: Use and Practice.
- 2. Install in accordance with manufacturer's instructions and ASTM C 636 and ASTM E 580.
- 3. Attach hangers to structural members. Do not support ceilings directly from permanent metal forms or steel floor or roof deck.
- 4. Space hangers not more than 48 inches o.c. in both directions.
- 5. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- 6. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- 7. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently. Do not eccentrically load system or induce rotation of runners.
- 8. Perimeter Trim: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
- 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. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, post installed mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
 - 3. 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.
 - 4. Do not attach hangers to steel deck tabs.
 - 5. Do not attach hangers to the steel roof deck. Attach hangers to structural members.
 - 6. 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.
 - 7. 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.
- 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.

2.4 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.
- B. Protect installed acoustical panel ceilings until completion of project.

END OF SECTION 09 51 10

SECTION 09 65 00 - RESILIENT FLOORING

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. All resilient flooring work indicated on the drawings and herein specified.
- 2. Recycled rubber flooring, with underlayment.

1.3 QUALITY ASSURANCE:

- A. Provide resilient flooring and accessories produced by a single manufacturer.
- B. If requested, finish a sample room for Architect's approval, prior to continuing with the work.

C. Substrate Testing:

- 1. Calcium Chloride Test Requirements: Perform anhydrous calcium chloride testing in accordance with ASTM F 1869-98, and forward copies of the test reports to the Architect, Owner, General Contractor, and Flooring Manufacturer's Representative.
- 2. Surface Tension Test Requirements: Perform pull off test in accordance with ASTM D4541 "Standard Test Method for Pull Off Strength of Coatings Using Portable Adhesion Testers" to test substrate surface tension.
- 3. In-Situ Relative Humidity Test Requirements: Perform in-situ relative humidity testing in accordance with ASTM F 2170-02, and forward copies of the test reports to the Architect, Owner, General Contractor, and Flooring Manufacturer's Representative.

D. Installer Qualifications:

- Minimum two years' experience, and have completed at least three projects of similar magnitude, material, and complexity. Upon request, provide project references including contact names and telephone numbers for three projects.
- 2. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
- 3. Finish areas designated by Architect.
- 4. Do not proceed with the remaining work until workmanship, color, sheen and finished appearance are approved by the Architect.

1.4 SUBMITTALS:

- A. Product Data: For information only, submit copies of manufacturer's technical data and installation instructions for each type of resilient flooring and accessory.
 - 1. Submit flame spread test reports in accordance with UL Standard #992, for Index of 0-75.

- 2. Submit manufacturer's specifications for installation of recycled rubber flooring and underlayment.
- 3. Preparation instructions and recommendations.
- 4. Storage and handling requirements and recommendations.
- 5. Installation methods.
- 6. Maintenance recommendations.
- 7. Closeout Submittals: Submit three copies of the following:
- 8. Maintenance and operation data includes methods for maintaining installed products, and precautions against cleaning materials and methods detrimental to finishes and performance.
- 9. Documentation of warranty specified herein.
- 10. Flame Spread Certification: Submit manufacturer's certification that resilient flooring furnished for areas indicated to comply with required flame spread rating has been tested and meets or exceeds indicated or required standard.

B. Samples:

- Submit sets of samples of each type, color and finish of resilient flooring and accessory required. Provide full-size tile units and 12" square samples of sheet flooring and 6" long sample of accessory. Include full range of flooring color and pattern variation. Sample submittals will be reviewed for color, texture and pattern only. Compliance with all other requirements is the exclusive responsibility of the Contractor.
- 2. Selection Samples: For each finish product specified, two sets of each type, colors and finish of resilient flooring and accessory required, indicating full range of color and pattern variation.
- 3. Verification Samples: For each finish product specified, two sets of each type, colors and finish of resilient flooring and accessory required, indicating color and pattern of actual product, including variations, as proof of application compliance.

C. Certifications:

- 1. Submit manufacturer's certifications indicating all resilient flooring materials conform to the following standards:
 - a. Resilient Flooring and Sheet Vinyl:
 - 1) ASTM E648; NFPA 253, Critical radiant Flux 0.45 watts/cm² or greater.
 - 2) ASTM E622; NFPA 258, NBS Smoke Density 450 or less.
 - b. Rubber Flooring:
 - 1) UL #992 2.0 or less.
 - 2) ASTM E162 50 or less.
 - ASTM E84 75 or less.
- 2. Submit manufacturer's certification that all products and materials, including mastics, furnished, and installed under this Section are "Asbestos-Free".

D. Maintenance Instructions:

 Submit copies of the manufacturer's written instructions for recommended maintenance practices for each type of resilient flooring and accessories.

E. Extra Stock:

- After completion of work, deliver replacement materials to the project site, as follows:
 - a. Tile flooring, not less than 3 boxes for each 50 boxes, or fraction thereof, for each type, size and color installed.
 - b. Sheet flooring and recycled rubber flooring, not less than 10 lineal yards for each type, width and color installed.
 - c. Rubber flooring: not less than fifty (50) full size pieces of each color used.
 - d. Furnish replacement materials from the same manufactured lot as the materials installed.

- e. Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 1 closeout submittals requirements.
- f. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra materials.

1.5 JOB CONDITIONS:

- A. Environmental Requirements/Conditions: In accordance with manufacturer's recommendations. Areas to receive flooring shall be clean, fully enclosed, weather tight with the permanent HVAC set at a uniform temperature of at least 65 degrees F (18 degrees C) and less than 85 degrees (30 degrees C) 48 hours prior to and during and for not less than 48 hours after installation. The flooring material shall be conditioned in the same manner prior to installation.
- B. Close off areas to traffic during resilient flooring installation, and for a period of time after installation as recommended in writing by the manufacturer.
- C. Install resilient flooring materials and accessories after other operations, including painting, have been completed.
- D. Where demountable partitions and other items are indicated for installation on top of sheet resilient flooring material, install flooring material before these items are to be installed.
- E. Concrete substrates must be tested in accordance to ASTM F 2170 or ASTM F 1869. If the results exceed limits of the product or adhesive to be used a moisture mitigation system or damp-proof membrane must be installed to bring moisture levels within specifications.
- F. Store tubes of feature strips and borders in a horizontal position. Storage in a vertical or inclined position causes uneven weight distributions, which will spaghetti the ends of the feature strips. Store all tubes lying flat.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Flooring material and adhesive shall be acclimated to the installation area for a minimum of 48 hours prior to installation.
- C. Store cartons of tile products flat and squarely on top of one another, not on edge.
- D. Store tubes of feature strips and borders in a horizontal position. Storage in a vertical or inclined position causes uneven weight distributions, which will spaghetti the ends of the feature strips. Store all tubes lying flat.

1.7 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Using Portland based cementitious base leveler or patch fill and cover all seams, nail heads, voids, cracks, and expansion joints. Achieve smooth, even, firmly attached substrate for best

- finish results. Gypsum based underlayment is not acceptable with Flooring unless it is first properly prepared.
- C. Encapsulate any gypsum with a premium latex primer/sealer recommended by gypsum manufacturer.
- D. Concrete slabs, both new and existing, shall be floated or repaired using Portland cement-based compound to achieve a flatness of 1/8" inch in 10 feet (3 mm in 3048 mm) throughout the entire floor area to receive finish flooring. Follow patch manufacturers' instructions.
- E. Once substrate flatness is achieved, 1/8 inch in 10 feet (3 mm in 3048 mm), continue with the next step.
- F. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- G. Concrete Substrates: The Contractor shall verify to the Owner and installer, a minimum of 30 days prior to the scheduled resilient flooring installation, the substrate conditions. All substrate testing shall be documented and submitted to the Architect and Owner before commencement of the flooring installation.
- H. Verify that substrates are dry, free of debris, and that all surfaces have properly cured.
- I. Remove substrate coatings, all existing adhesives, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturers. Mechanical methods shall not telegraph through new flooring finish. Do not use solvents.
- J. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
- K. Moisture Testing: Perform ASTM 1869 Calcium Chloride and ASTM 2170 In-Situ RH test and record results. Choose proper adhesive for flooring and installation.
- L. Moisture Mitigation: Provide moisture mitigation systems at areas where moisture at substrate exceeds flooring manufacturers' requirements. The moisture mitigation system shall be compatible with full flooring system and to meet manufacturers' warranty. Proceed with installation only after substrates meet specifications.

PART 2 - PRODUCTS

2.1 COLORS AND PATTERNS:

- A. Provide colors and patterns as shown or scheduled, or as selected from manufacturer's standards.
 - 1. Unless a greater amount is shown, include 25% of resilient flooring area for borders, stripes and/or patterns as directed by the Architect's future sketch.

2.2 LVT (LUXURY VINYL TILE)

- A. Type LVT-1 Basis of Design:
 - 1. Manufacturer: Armstrong
 - 2. Type: Luxury Vinyl Tile Plank
 - 3. Construction: Luxury Vinyl Tile
 - 4. Style: Terra
 - 5. Size: 18" X 18"
 - 6. Color: As selected by Architect from manufacture's premium colors
 - 7. Thickness: 0.100"
 - 8. Wear thickness: 20 mil
 - 9. Edge profile: Micro-bevel
 - 10. Class: Class III, Type B
 - 11. Installation: Direct Glue
 - 12. Finish: Diamond 10 Technology
 - 13. Testing Requirements:
 - a. Slip Resistance ASTM D2047: ADA Compliant
 - b. Residual Indentation F1914: Passes
 - c. Resistance to Heat ASTM F1514: Passes
 - d. Resistance to Light ASTM F1515: Passes
 - e. Resistance to Chemicals ASTM F925: Passes
 - f. Smoke Density ASTM E662: Passes (<450)
 - 14. Warranty: 20 Year Commercial

2.3 RUBBER FLOORING

- A. Type Rubber Stair Treads:
 - Manufacturer: Armstrong
 - 2. Type: Stair Treads and Landing tiles
 - 3. Construction: Synthetic Butyl Rubber with integrated EPDM colored granules
 - 4. Style: As selected by Architect by Manufacturer's selections.
 - 5. Size: to suit stair dimensions
 - 6. Color: As selected by Architect from manufacture's premium colors
 - 7. Thickness: .125"
 - 8. Warranty: 5-year Commercial

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Inspect the floor to be installed immediately upon arriving at job site; perform a moisture test.
- B. Do not begin installation until the substrates have been properly prepared.
- C. If substrate preparation is the responsibility of another installer, notify the Architect of unsatisfactory preparation before proceeding.
- D. The installation of the resilient flooring shall not begin until the work of all other trades has been completed, particularly wet and overhead trades.
- E. Areas to receive flooring shall be adequately lit during all phases of the installation process.

3.2 INSTALLATION

A. General:

- The permanent HVAC system shall be turned on and set to a minimum of 65 degrees F
 (20 degrees C) for a minimum of 48 hours prior to, during and 48 hours after installation.
 After the installation, the maximum temperature should not exceed 125 degrees F (37 degrees C).
- 2. All products shall be allowed to acclimate at least 24 hours before installation. This means the product shall be placed in the same room as the install that is taking place and removed from its factory packaging.
- 3. Material shall be visually inspected prior to installation.
- 4. Ensure that all recommendations for sub-floor and jobsite conditions are met prior to beginning the installation. Once the installation is started, Contractor and installer have accepted those conditions.
- 5. Install in accordance with manufacturer's installation instructions for each product type and application specified.
- 6. Open enough cartons of floor tiles to cover each area and mix tile to ensure shade variations do not occur within any one area.
- 7. Roll the flooring in both directions using a 100 pound three-section roller.

B. Layout and Installation:

- Position planks so the end seem are no closer than the width of the plank being installed.
 Maintain this approach to staggering the planks throughout the entire installation while keeping a random appearance.
- 2. Center tiles or planks in rooms and hallways so borders are not less than half a tile or plank when possible.
- 3. Cut edges shall always be installed against a wall.
- 4. Installation using tile and plank installation techniques recommended by manufacturer.
- 5. Install tiles, planks, borders and feature strips in locations and configurations indicated on the Drawings.

C. Product Application:

- 1. Install in accordance with adhesive recommendations on the label or data sheet.
- 2. Refer to manufacturer's literature for selection criteria for applicator, type.
- 3. Using proper applicator, apply adhesive in accordance with label on adhesive.

3.3 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protection of resilient
- B. Perform the following operations immediately after completing resilient product
 - 1. Remove adhesive and other blemishes from exposed surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
- C. Protect resilient products from mars, marks, indentations, and other damage from
- D. Resilient flooring recommended by manufacture to receive protective wax, provided sealer and wax per manufacture's recommendation.
- E. No traffic for 24 hours after installation.
- F. No heavy traffic, rolling loads, or furniture placement for 72 hours after installation.

- G. Wait 72 hours after installation before performing initial cleaning.
- H. A regular maintenance program must be started after the initial cleaning.

PART 4 - REFERENCES

- 4.1 ASTM International (ASTM):
 - A. ASTM C 1028 Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.
 - B. ASTM D 2859 Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials.
 - C. ASTM D 3884 Standard Guide for Abrasion Resistance of Textile Fabrics (Rotary Platform, Double-Head Method), Abrasion Wheels- H18 with 1000grams load.
 - D. ASTM E 492 Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine.
 - E. ASTM E 662 Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
 - F. ASTM E 648 Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
 - G. ASTM E 989 Standard Classification for Determination of Impact Insulation Class (IIC).
 - H. ASTM F 137 Standard Test Method for Flexibility of Resilient Flooring Materials with Cylindrical Mandrel Apparatus.
 - I. ASTM F 386 Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces.
 - J. ASTM F 925 Standard Test Method for Resistance to Chemicals of Resilient Flooring.
 - K. ASTM F 970 Standard Test Method for Static Load Limit.
 - L. ASTM F 1514 Standard Test Method for Measuring Heat Stability of Resilient Flooring by Color Change.
 - M. ASTM F 1515 Standard Test Method for Measuring Light Stability of Resilient Flooring by Color Change.
 - N. ASTM F 1700 Standard Specification for Solid Vinyl Floor Tile.
 - O. ASTM F 1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
 - P. ASTM F 1914 Standard Test Methods for Short-Term Indentation and Residual Indentation of Resilient Floor Covering.

Q. ASTM F 2055 - Standard Test Method for Size and Squareness of Resilient Floor Tile by Dial Gage Method.

- R. ASTM F 2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
- S. ASTM F 2199 Standard Test Method for Determining Dimensional Stability of Resilient Floor Tile after Exposure to Heat.

END OF SECTION 09 65 00

SECTION 096510 - RESILIENT BASE AND ACCESSORIES

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:
 - Resilient stair accessories.
 - 2. Resilient molding accessories.
- B. Related Sections:

Division 09 Section "Resilient Flooring" for resilient floor coverings, including Luxury Vinyl Tile, Vinyl Composite Tile, and Static Dissipative flooring.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For each type of product indicated.
- C. Samples for Verification: For each type of product indicated, in manufacturer's standard-size Samples but not less than 12 inches long, of each resilient product color, texture, and pattern required.
- D. Product Schedule: For resilient products. Use the same designations indicated on Contract Drawings.

1.4 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 3% of each type, color, pattern, and size of resilient product installed.

1.5 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
 - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by the manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C).

1.7 PROJECT CONDITIONS

- A. Maintain ambient temperatures within range recommended by the manufacturer, but not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C) in spaces to receive resilient products during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. Until Substantial Completion, maintain ambient temperatures within range recommended by the manufacturer, but not less than 55 deg F (13 deg C) or more than [95 deg F (35 deg C).
- C. Install resilient products after other finishing operations, including painting, have been completed.

1.8 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Using Portland based cementitious base leveler or patch fill and cover all seams, nail heads, voids, cracks, and expansion joints. Achieve smooth, even, firmly attached substrate for best finish results. Gypsum based underlayment not acceptable with Flooring unless it is first properly prepared.
- C. Encapsulate any gypsum with a premium latex primer/sealer recommended by gypsum manufacturer.
- D. Concrete stair treads, both new and existing, level by floating or repaired using Portland cement-based compound to achieve a flatness of 1/8" inch in 10 feet (3 mm in 3048 mm) throughout each tread. Follow patch manufacturers' instructions.
- E. Once substrate flatness is achieved, 1/8 inch in 10 feet (3 mm in 3048 mm), continue with the next step.
- F. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- G. Verify that substrates are dry, free of debris, and that all surfaces have properly cured.
- H. Remove substrate coatings, all existing adhesives, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by the manufacturer. Mechanical methods shall not telegraph through new flooring finish. Do not use solvents.

I. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.

PART 2 - PRODUCTS

2.1 RESILIENT STAIR ACCESSORIES – RST-1

- A. Resilient Stair Riser:
 - 1. Manufacturers:
 - a. Roppe
 - b. Allstate Rubber Flooring
 - c. Nora Rubber Flooring
- B. Risers: Smooth, flat, produced by same manufacturer as treads and recommended by manufacturer for installation with treads. Match existing condition, verify in field.
 - 1. Thickness: 0.125 inch (3.2 mm)
- C. Colors and Patterns: As selected by Architect from full range of industry colors.

2.2 RESILIENT MOLDING ACCESSORY

- A. Resilient Molding Accessory:
 - 1. Manufacturers:
 - a. Johnsonite / Tarkett
 - b. Roppe Corporation, USA, accessories from flooring manufacturer is not available.
 - c. Schluter Systems
- B. Description:
 - 1. Reducer strip for resilient floor covering
 - 2. Transition strips
- C. Material: Rubber
- D. Profile and Dimensions: ADA complaint. To suit flooring. Submit for approval
- E. Colors and Patterns: As selected by Architect from the manufactures full range of 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 manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

C. Floor Polish: Provide protective liquid floor polish products as recommended by resilient stair tread manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates for Resilient Stair Treads and Accessories: Prepare according to ASTM F 710.
 - 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 the manufacturer. Do not use solvents.
 - 3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer.
 - 4. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.
 - a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission within the manufacturer acceptable range in 24 hours.
 - b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have relative humidity level within the manufacturer acceptable range.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install resilient products until they are the same temperature as the space where they are to be installed.
 - 1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
- E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 RESILIENT 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 practicable without gaps at seams and with tops of adjacent pieces aligned.
- D. A tightly adhered 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.

3.4 RESILIENT ACCESSORY INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient accessories.
- B. Resilient Stair Accessories:
 - 1. Tightly adhered to substrates throughout the 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 the edges of carpet and resilient floor covering that would otherwise be exposed.

3.5 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protection of resilient products.
- B. Perform the following operations immediately after completing resilient product installation:
 - 1. Remove adhesive and other blemishes from exposed surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
- C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Floor Polish: Remove soil, visible adhesive, and surface blemishes from resilient stair treads before applying liquid floor polish.
 - 1. Apply the number of coat(s) recommended by manufacturer.
- E. Cover resilient products until Substantial Completion.

END OF SECTION 096510

SECTION 096800 - CARPETING

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. Floor Covering:
 - All scheduled and shown floors.
- B. Related Sections:
 - 1. Submittal Procedures Division 1.

1.3 PRE-INSTALLATION CONFERENCE:

- A. Pre-Installation Conference: Meet at the project well in advance of the time scheduled for work, (a minimum of one week), and review requirements for the work and conditions which could possibly interfere with successful performance of the work. Require all parties concerned with the work, or required to coordinate with it, or to protect it thereafter, to attend the conference, including:
 - 1. Owner or Representative
 - 2. General Contractor
 - 3. Installer
 - 4. Manufacturer(s) Representatives
 - 5. Architect

1.4 QUALITY ASSURANCE:

- A. Installer: Engage a carpet installation firm, which has at least five (5) years successful experience in carpet installations similar in size and type to the carpeting requirements of this project.
- B. Manufacturer's Representative: Obtain carpeting materials from only manufacturers who will, when requested, send a qualified technical representative to the project site, to advise the Installer of proper installation procedures.
- C. Flame Spread Rating: Provide only carpet which has been tested and conforms to the following:
 - 1. Federal Flammability Standard DOC-FF-1-70 (The Pill Test).

2. Radiant Panel Test ASTM E 648.

1.5 SUBMITTALS:

- A. Product Data: For information only and prior to submission of samples, submit copies of manufacturer's data on carpet and carpeting materials, certifying that materials comply with requirements of these specifications: also including installation instructions and maintenance recommendations.
 - 1. Include certified laboratory test reports for flammability as required hereinbefore.
- B. Samples: Submit a full carpet sample of each type, texture and pattern of carpeting required along with full catalog of colors. Provide additional carpet samples upon Architect request at no charge to the Owner. Review with Architect prior to submitting to Architect. Submit three 6" long samples of carpet edge guard stripping. The architect's review of samples will be for color, pattern and texture only. Compliance with other requirements is the exclusive responsibility of the Contractor.
- C. Extra Stock: Deliver extra stock and scraps of unused carpet to Owner's attic stock, as directed by the Owner, in accordance with hereinafter specified requirements.
- D. Pre-installation Meeting: As previously specified.

1.6 JOB CONDITIONS:

- A. Space Enclosure: Do not deliver materials or install carpeting until space has been enclosed and is weather-tight, and until wet-work, including painting, in the space has been completed and is nominally dry, and until work above ceilings has been completed, and until ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.
- B. Examine the substrate, and the conditions under which the carpeting is to be installed, and do not proceed with the work until unsatisfactory conditions have been corrected.
- C. SITE CONDITIONS
- D. The following conditions must be maintained 24 hours prior to, during and permanently after installation:
- E. HVAC System must be operational.
- F. The installation site, carpet and adhesive must be between 50°F and 95°F.
- G. The installation site's ambient relative humidity must not fall below 40%.
- H. Conduct relative humidity or Anhydrous Calcium Chloride testing. Results must be within the proper range for Shaw 5000 adhesive:
- I. Calcium Chloride ASTM F-1869 5.0 lbs per 1000 SF /24 hours
- J. Relative Humidity ASTM F-2170 85%

K. Conduct pH testing on the floor in several locations. A reading below 5.0 or above 9.0 requires corrective measures.

1.7 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Using Portland based cementitious base leveler or patch fill and cover all seams, nail heads, voids, cracks, and expansion joints. Achieve smooth, even, firmly attached substrate for best finish results. Gypsum based underlayment is not acceptable with Flooring unless it is first properly prepared.
- C. Encapsulate any gypsum with a premium latex primer/sealer recommended by gypsum manufacturer.
- D. Concrete slabs, both new and existing, shall be floated or repaired using Portland cement-based compound to achieve a flatness of 1/8" inch in 10 feet (3 mm in 3048 mm) throughout the entire floor area to receive finish flooring. Follow patch manufacturers' instructions.
- E. Once substrate flatness is achieved, 1/8 inch in 10 feet (3 mm in 3048 mm), continue with the next step.
- F. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- G. Concrete Substrates: The Contractor shall verify to the Owner and installer, a minimum of 30 days prior to the scheduled resilient flooring installation, the substrate conditions. All substrate testing shall be documented and submitted to the Architect and Owner before commencement of the flooring installation.
- H. Verify that substrates are dry, free of debris, and that all surfaces have properly cured.
- I. Remove substrate coatings, all existing adhesives, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by the manufacturer. Mechanical methods shall not telegraph through new flooring finish. Do not use solvents.
- J. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
- K. Moisture Testing: Perform ASTM 1869 Calcium Chloride and ASTM 2170 In-Situ RH test and record results. Choose proper adhesive for flooring and installation.
- L. Moisture Mitigation: Provide moisture mitigation systems at areas where moisture at substrate exceeds flooring manufacturers' requirements. The moisture mitigation system shall be compatible with a full flooring system and meet manufacturers' warranty. Proceed with installation only after substrates meet specifications.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

1. Type CPT-1 (Basis of Design):

Manufacturer: Milliken
Collection: Obex
Style Number: Cutx / Fizz

Color: As selected by Architect

Product Type: Tile

Construction: Tufted, cut Pile

Yarn Type: Milliken-Certified WearOn®

Nylon Type: StainSmart®

Dye Method Printworks Precision Dying Tufted Face Weight 24 oz/ yd² (814 g/m²)

Gauge 5/32 Stitches Per Inch 9.5

Tufts 60.8/in² (942 / 100 cm²) Finished Pile Thickness 0.186" (4.72 mm)

Backing: WellBAC

ADA Compliant

Testing Requirements:

a. Crocking (AATCC165) ≥ 4.0 Wet or Dryb. Lightfastness (AATCC 16E): 4.0 at 80 hours

c. Flammability Radiant Panel (ASTM E648): Passes (Class 1)

d. Smoke Density (ASTM E662): Passes (450)

e. Methenamine Pill Test (ASTM D2859): Self-Extinguishing

f. Indoor Air Quality - CRI Green Label Plus: GPL0793, Carpet Category 5Y

Warranties:

Lifetime Face Fiber Wear

Lifetime Antistatic

Lifetime Floor Compatibility

Lifetime Color Pattern Permanency

Lifetime Floor Release Lifetime Cushion Resiliency Lifetime Moisture Resistance Lifetime Delamination of Backing Lifetime Staining / Soiling (StainSmart)

Lifetime Dimensional Stability

Lifetime Tuft Bind Lifetime Edge Ravel

Type CPT-2 (Basis of Design):

Manufacturer: Milliken

Collection: Moraine, Sound of Color, Lineation (as selected by

Architect)

Color: As selected by Architect

Product Type: Tile

Construction: Tufted, Textured Loop
Tile Sizes 19.7" x 19.7" (50 cm x 50 cm)
Yarn Type: Milliken-Certified WearOn®

Nylon Type: StainSmart®

Dye Method Printworks Precision Dying

Tufted Face Weight 16.3 oz/yd² (552.7 g/m²) through (15 oz/yd² (508.6 g/m²)

Gauge 1/10 through 1/12, varies slightly per collection Stitches Per Inch 14.4 through 9.5, varies slightly per collection

Tufts 144/in² (2,230 / 100 cm²) through 114/in² (1.766 / 100 cm²),

varies slightly per collection.

Finished Pile Thickness 0.84" (2.13 mm) - .112" (2.84mm)

Warranties:

Lifetime Face Fiber Wear

Lifetime Antistatic

Lifetime Floor Compatibility

Lifetime Color Pattern Permanency

Lifetime Floor Release

Lifetime Cushion Resiliency

Lifetime Moisture Resistance

Lifetime Delamination of Backing

Lifetime Staining / Soiling (StainSmart)

Lifetime Dimensional Stability

Lifetime Tuft Bind Lifetime Edge Ravel

2.1 COLORS AND PATTERNS

A. Provide colors and patterns as shown or scheduled, or as selected from manufacturer's standards.

2.2 ACCESSORY MATERIALS:

- A. Carpet Reducers/Edges: Vinyl carpet manufacturer's suggested trim accessories for the installation specified; colors as selected.
- B. Adhesive for Carpet: Provide adhesive, as recommended by the carpet manufacturer or cushion manufacturer, which will allow removal of carpet or cushion at any time without damage to carpet or cushion. Provide adhesive which complies with flame spread rating required for the carpet installation, if any. Ensure that selected adhesive is compatible with curing/sealing compounds installed.
- C. Miscellaneous Materials: Provide the types of seaming tape, thread, nails, adhesives, and other accessory items recommended by the carpet manufacturer and Installer for the conditions of installation and use, without failure during the life of the carpet.

2.3 EXTRA OR SURPLUS MATERIALS:

A. Carpet Overrun: Limit production overrun on each carpet to the amount necessary to ensure complete installation without extra seams. Deliver all unused carpet and large scraps, to the Owner for his "attic stock". Dispose of scraps less than 2 sq. ft. in area, or less than 8" in width. Attic stock consists of no less than one full box of each pattern type and color.

PART 3 - EXECUTION

3.1 PREPARATION:

- A. Measure each space to receive carpeting, as a basis of supplying, cutting, and seaming the carpet. Do not scale the Architect's drawings or calculate sizes from the dimensions shown.
- B. Vacuum substrates immediately prior to carpet installation and remove all deleterious substances which would interfere with the installation or be harmful to the work.

3.2 INSTALLATION:

A. General:

- 1. Comply with manufacturer's instructions and recommendations. Place seams in the directions indicated, and as accepted on shop drawings, if any. Maintain direction of pattern and texture, including lay of pile. Do not seam weft to warp, except as directed.
- 2. Extend carpet under open-bottomed and raised-bottom obstructions, and under removable flanges of obstructions. Extend carpet into closets and alcoves of rooms indicated to be carpeted unless another floor finish is indicated for such spaces. Extend carpet under all movable furniture and equipment, unless otherwise indicated.
- 3. Install carpet edge guard at every location where edge of carpet is exposed to traffic, except where another device, such as an expansion joint cover system or threshold, is indicated with an integral carpet binder bar.

B. Glued-Down Installation:

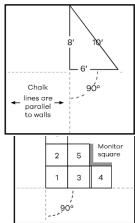
- 1. Install a test sample to demonstrate proper adhesion and removal capability of the bonding system. Demonstrate installation and removal procedure to Owner's personnel, with Architect present.
- 2. Cut and fit sections of carpet of each room of space, prior to application of adhesive.
- Apply adhesive, and separate release agent, if any, in accordance with manufacturer's instructions, complying with procedure demonstrated to be satisfactory by test sample. Butt carpet seams and edges tightly together, eliminate air pockets, and roll to ensure uniform bond everywhere.
 - a. Cement the edges of the backing together in accordance with manufacturer's instructions.
 - b. Remove adhesives from face promptly upon exposure.

C. INSTALLATION MATERIALS

- D. Adhesives: per manufacturer recommendations for tile and installation type.
- E. Primer (if needed): Refer to manufacturer recommendations for primer type that is compatible with floor type and carpet tile. Primer should not contain solvents, alcohol, or other hazardous materials per OSHA 29 CFR 1910.1200. Non-photo chemically reactive per rule #102.
- F. Leveling and Patching Compounds: Use a cementitious patching/leveling compound that meets or exceeds the required moisture level and pH requirements. Use of gypsum-based patching and/or leveling compounds which contain Portland or high alumina cement and meet or exceed the compressive strength of 3,000 psi are acceptable. Refer to manufacturer recommendations.

3.3 LAYOUT AND INSTALLATION

- Establish center point. Measure area to receive carpet and determine a center starting position by measuring from dominant walls or similar architectural features.
- b. Adjust for cuts. Initial placement of the center point may need to shift slightly to make sure perimeter tile cuts or at least half the tile's width (Example: 12" on a 24" x 24" tile).
- c. Set perpendicular lines. Establish two chalk lines that cross at adjusted central point and intersect at right angles. The base line should be the longest measurement in a rectangular area and parallel to a wall or architectural break point. Having four equal quadrants with perpendicular lines at the right angles will provide an essential guide to anchor the first tiles, to help keep the installation square, and to fit tile backings tightly together.



- d. Establish a grid. Keeping the installation tight and square requires creating a grid by establishing two perpendicular chalk lines, calculated at right angles on the area's enter point, and then by anchoring the first tiles installed snug against the two chalk lines. The two lines intersect to form a right angle and or "square" when two points, one at 8' vertically and one at 6' horizontally from center point, or exactly 10' apart. Use the 3',4', and 5' formula as described above to set perpendicular chalk lines in smaller areas.
- e. Stair-step tiles within grid. Start by placing the first tile backing snug into corner where chalk lines cross. Tile backing should align with chalk lines on two sides. Form steps by sliding each subsequent tile, backing first. into tight alignment with the previous tile. Avoid overly compressing backings or trapping yarn in seams. Second tile goes on top with one side on the vertical chalk line. The third tile goes against the right side of the first tile. Continue in the same manner, etc. Use a carpenter's square to spot check frequently. Please keep in mind that seams on any new carpet tile installation will be more obvious until the yarn has acclimated, relaxed, and blossomed with routine traffic and vacuuming. To facilitate seam blending it is recommended to tractor seams with a box tractor. Keep tiles square and tight to avoid gaps.
- f. Check tightness. Tightness or gain should be measured periodically to assure tile backings are snug and the installation is square. Determine the amount of gain or growth in the installation by measuring the total distance between 10 tiles in both directions. Ten 24" x 24" tiles have a net measurement of 240". The seam between each tile will always create some amount of gain or addition space in the installation. Measuring 10 tiles or 11 joints in either direction will provide enough seams to accurately represent the amount of gain. Whether the tile is 24" x 24", 18" x 36", or 12" x 48", the gain or space between tiles should never be more than 1/4" greater than a net measurement of 10 tiles or 11 joints. For instance, 10 tiles at 24" each should not exceed 240" in either direction. If the net measurement exceeds a gain of 1/4", the affected area(s) will need to be picked-up and re-installed tighter to stay on grid.
- g. Cut/ Trim tiles properly. Carpet modules will require cutting at perimeters, floor electrical outlets and door openings. Whenever modules are cut or trimmed, adhesive must be used. Loop pile modules may require some trimming or clipping of tufts. This is typical of this type of construction and is not a manufacturing problem. Small pieces of carpet tile should also have glue applied to the backing to help hold them in place.

h. Carpet tile manufacturers may have a specific recommended installation method. Refer to brochure inside architect folder or website for installation recommendations

3.4 MAINTENANCE

- Post-installation Care
 - i. Place plywood over the carpet when heavy objects are moved within 24 hours after installation.
- j. Preventative Floor Care
 - i. Use protective chair mats under chairs with casters.
 - ii. Use soil removal mats at exterior entrances.
 - iii. Use absorbent mats in areas where moisture, oil and grease are present.
- k. Routine Maintenance
 - i. Set a schedule depending on traffic and vacuum regularly.
 - ii. Remove spots with spot removers as soon as they occur.
 - iii. Use encapsulation agents periodically.
 - iv. Clean with hot water extraction periodically.

| Traffic Level | Vacuum | Spot Removal | Interim Cleaning | Hot Water Extraction |
|---------------|--------|--------------|------------------|----------------------|
| Light | 2/week | As needed | As needed | 1/year |
| Moderate | 1/day | As needed | As needed | 1/year |
| Heavy | 1/day | As needed | Monthly | 4/year |
| Extra Heavy | 1/day | As needed | Weekly | Monthly |

3.5 PROTECTION:

- A. Remove debris from installation, carefully sorting pieces to be saved from scraps to be disposed of
- B. Vacuum carpet with a commercial machine, with rotating agitator or beater in the nozzle. Remove soiled spots.
- C. Protect the carpeted areas, during the remainder of the construction period, so that the carpet will be in undamaged and unsoiled condition at the time of acceptance. Recommended type of non-staining, non-adhesive cover material that should be used for protective cover.
- D. END OF SECTION 09 68 00

SECTION 09 70 00 - ARCHITECTURAL FINISHES

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 DESCRIPTION OF WORKS

- A. Architectural finish films for the following interior applications: (3M DI-NOC Architectural)
 - 1. New and existing glazing at walls and doors.

1.3 RELATED SECTIONS

A. Division 8 - Glass and Glazing.

1.4 REFERENCES

- A. ASTM International (ASTM): ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. ASTM International (ASTM): ASTM E 308 Standard Recommended Practice for Spectrophotometry and Description of Color in CIE 1931 System.
- C. ASTM International (ASTM): ASTM E 903 Standard Methods of Test for Solar Absorbance, Reflectance and Transmittance of Materials Using Integrating Spheres.
- D. Underwriters Laboratories, Inc. (UL): UL 723 Test for Surface Burning Characteristics of Building Materials.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 Administrative Requirements.
- B. Product Data: Manufacturer's data sheets for products specified, including but not limited to the following:
 - 1. Performance characteristics.
 - 2. Preparation instructions and recommendations.
- C. Storage and handling requirements and recommendations.
 - 1. Maintenance data for installed products, including precautions against harmful cleaning materials and methods.

- 2. Installation Instructions.
- 3. Shop Drawings: Submit shop drawings showing layout, profiles, and product components, including dimensions, anchorage, and accessories.
- 4. Verification Samples: For each film specified, two samples, 4 inches x 4 inches (100 mm x 100 mm), representing actual architectural film colors and patterns.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Regularly engaged in the manufacture of the architectural finish films
- B. Installer Qualifications: Installation shall be performed by a trained and qualified installer, specialized and experienced in the work required for this project. A list of 3M Endorsed installers is available at 3M.com/AMD or 3M Commercial Solutions, 1-888-650-3497.
- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
- D. Finish areas designated by Architect.
- E. Do not proceed with the remaining work until workmanship is approved by the Architect.
- F. Refinish the mock-up area as required to produce acceptable work.
- G. Mock-up area may not become part of finished work.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store and handle materials and products in strict compliance with manufacturer's instructions and recommendations and industry standards.
- B. Deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Store products protected from weather, temperature, and other harmful conditions as recommended by supplier. Conditions including but not limited to:
 - 1. 40 degrees F to 90 degrees F (4 degrees C to 32 degrees C) maximum temperature.
 - 2. Out of sunlight.
 - 3. Clean dry area.
 - 4. Original container.
 - 5. Do not stack boxes over six (6) units high. Excessive weight can damage the film.
 - 6. Relative humidity is below 80 percent.
 - 7. Handle products in accordance with manufacturer's instructions.
 - 8. Total Pre-installation Shelf Life: Apply within 2 years of date of purchase.

1.8 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity and ventilation) within limits recommended by the manufacturer for optimum results. Do not install products under environmental conditions outside the manufacturer's absolute limits.

1.9 SEQUENCING

A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.10 WARRANTY

A. Manufacturer's Standard Limited Warranty: For materials and workmanship.

PART 2 - PRODUCTS

A. 2.1 MANUFACTURERS

- A. <u>Basis of Design:</u> 3M Commercial Solutions, which is located at: 3M Center Bldg. 223; St. Paul, MN 55144-1000; Toll Free Tel: 888-650-3497; Tel: 651-737-1081; Fax: 651-737-8241; Email: request info (apeters2@mmm.com); Web: http://www.3m.com/3M/en_US/building-window-solutions-us
- B. Other acceptable Manufacturers:
 - 1. Designed Film
 - 2. Design Film
 - 3. Substitutions will be considered in accordance with Section 012500 Submittal Procedures.

C. ARCHITECTURAL FINISH FILMS

- 1. Style: Basis of Design: 3M Fasara Glass Finish (match similar for other manufacturers).
- 2. Color/Pattern: Architect to select from full range of selections.

2.2 SURFACE PREPARATION

- A. Comply with manufacturers' instructions for surface preparation. Consider these factors in determining the suitability of the Product:
 - 1. Substrate texture affects Product adhesion and application ease.
 - 2. Unless the substrate is very smooth, its texture may be visible through the product.
 - Compounds used to smooth a textured substrate permanently change that substrate.
 - 4. Product removal may damage the substrate or its finish.
 - 5. Application surface conditions affect product adhesion.
 - 6. Ensure that the existing paint, surface finish, or wall covering has an excellent bond to the

substrate area where product will be applied.

- 7. Repair, prime and paint the substrate, as needed.
- 8. An adhesion promoter may be required to increase product adhesion.
- 9. Human and environmental conditions affect products.
- 10. Temperature and humidity in recommended range.
- 11. Heating or cooling ducts in proximity.
- 12. Unsealed substrates in front of water sources.
- 13. People or equipment that will be in contact with the product.
- 14. The product may contain a splice. The location of the splices is marked with a tab along the edge of the product. The installer will need to determine the impact of the splice and work around it to make the best use of the material layout.
- 15. Test and prepare application surfaces per instructions in the Installation Guide.
- 16. Use the 3M Wall Adhesion Test to determine the compatibility of the application surface with the Product.
- 17. Use the 3M Enhanced Cleaning Method to ensure that the application surface is ready to receive and hold the product.
- 18. Repair damaged application surfaces per instructions in the Installation Guide

2.3 APPLICATION

- A. Do not proceed with installation until all the finished work has been completed in and around the work area.
- B. Measure the application surface and cut film to size with a minimum 1/2 in. extra on all sides for trimming.
- C. Install on application surfaces with no gaps, wire seams, or overlaps. Form smooth, wrinkle-free, bubble-free surface for finished installation.
- D. No exposed joints on corners or other "open" type joints permitted.
- E. Verify patterns prior to material acquisition as some part numbers do not allow three-dimensional forming.
- F. Comply with manufacturers' installation instructions applicable to products and applications indicated, except where more stringent requirements apply.
- G. Remove air bubbles, wrinkles, and blisters. Use approved procedures to prevent the formation of air bubbles, wrinkles, blisters and other defects.

2.4 SCHEDULE

- A. Room: Glass doors and walls. See drawings for walls and doors to receive privacy films.
- B. Material: Tempered Glass, Existing glazing.
- C. Horizontal Surfaces Exposed to View: Design Category, Product number.
- D. Shop Drawing Reference: In addition to original A/E elevations, the installation specialist may be asked to provide elevation views of installation surfaces to confirm design intent upon request.

2.5 CLEANING AND PROTECTION

- A. Cleaning methods recommended by architectural surfacing manufacturers for applicable environment.
- B. Protect completed graphic film during the remainder of construction period.
- C. Consult with authorized installation specialist for project specifics.

END OF SECTION 097000

SECTION 09 84 13 - ACOUSTIC WALL PANELS

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: Acoustic wall panel systems and installation accessories.

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM C635 Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
 - 2. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 3. ASTM E1264 Standard Classification for Acoustical Ceiling Products.
- B. Ceilings and Interior Systems Construction Association (CISCA).
 - 1. CISCA Code of Practices.

1.2 REFERENCES

- A. American Society for Test Methods (ASTM):
 - 1. E 84 Test Method for Surface Burning Characteristics of Building Materials
 - C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
 - 3. E795 Standard Practices for Mounting Test Specimens during Sound Absorption Tests
- B. Scientific Certification Systems (SCS):
 - 1. Environmental Certification Services, Recycled Content Standard

1.3 SUBMITTALS

- A. Submittals: Submit listed submittals in accordance with Conditions of the Contract and Division 1. Division 01 "Submittal Procedures".
- B. Product Data: Submit manufacturer's technical data and installation instructions for each type of acoustical wall panel required.
- C. Samples: Submit 12-inch X 12-inch samples of specified acoustical wall panel featuring specified surface material, edge and corner detail and method of attachment.

- D. Certifications: Submit manufacturer's written product certification that all furnished wall panels meet or exceed the specification requirements. Include certified copies of tests specified when required.
- E. Shop Drawings: Submit elevation drawings showing wall panel layout, methods of attachment and installation details.

1.4 QUALITY ASSURANCE

- A. Single-Source Responsibility: Provide acoustical panel units and installation components by a single manufacturer whose published product literature clearly indicates compliance of acoustical wall panels with specified requirements.
- B. Applicator: Installation by skilled applicators with no less than three years of documented experience installing acoustical wall panels of the types and extent specified for the project.
- C. Fire Performance Characteristics:
 - 1. Surface Burning Characteristics: All panel components have a Class 1/A fire rating when tested in accordance with ASTM F 84.

D. Mock-ups:

- 1. Install onsite mock-up equivalent to full size of wall panels in an area designated by the Architect. Replace unacceptable panels.
- 2. Approved mock-up panels will be used as the standard of performance for the project and will be incorporated into the finished project.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver acoustical wall panels to the project site in unbroken and undamaged original factory packaging and clearly labeled with the manufacturer's identification label, quality or grade.
- B. Storage: Store materials in a clean, dry, climate-controlled storage area within temperature and humidity ranges recommended by the manufacturer. Provide protection from damage and exposure to harmful environmental conditions.
- C. Acclimatization: Before installing acoustical wall panels, allow panels to acclimatize to room temperature and humidity.
- D. Handling: Carefully handle acoustical wall panels to avoid soiling and damage.

1.6 PROJECT CONDITIONS

A. Environmental Conditions:

- 1. Do not apply acoustical treatments when surface and ambient temperatures are outside the temperature ranges required by the wall panel manufacturer.
- 2. Do not install acoustical panels until wet work such as concrete, plastering and painting is done, and the building is completely enclosed.

- 3. Provide continuous ventilation and heating facilities to maintain substrate surface and ambient temperatures above 60 degrees F and not more than 85 degrees F unless required otherwise by manufacturer's instructions.
- 4. Maintain constant recommended temperature and humidity for at least 48 hours prior to, throughout the installation period and continuously after panel installation completion.
- 5. Field Measurements: Check and verify actual wall surfaces by accurate field measurements before fabrication.

1.7 WARRANTY

A. Submit manufacturer's 1-year written warranty against manufacturing defects from date of substantial completion.

1.8 MAINTENANCE

A. Replacement Materials: Provide full-size units equal to percent of each type of acoustical wall panel installed for maintenance purposes. Furnish replacement materials from the same production run as installed materials. Protect material with clearly marked packaging indicating product identification and project location.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers and products: Provide products from one manufacturer, unless otherwise specified or approved. The following manufacturers offer products herein specified:
 - 1. Basis of Design: Ghent
 - 2. Match similar for other manufacturers. Submit product comparison for approval

2.2 ACOUSTICAL WALL PANELS

- A. Basis of Design: Acoustic Wall Panels:
 - 1. Ghent Hex A 1821 Colors to be Selected from full range of manufacturer selections.
 - a. Includes a Hex install fixture that allows for quick layout of Hex displays
 - d. Total Weight: 21 ounces per linear yard.
 - e. Backing Weight: 2.7 ounces per linear yard.
 - f. Fabric backing and content: Poly-Cotton Osnaburg.
 - g. Fabric: Tier 2, Maharam. Architect to select. Submit for approval.
 - g. Warranty: 10 years minimum
 - h. See drawings for color schedule and arrangement.
- B. Installation Stabilizing Bumper is made of black polyurethane rubber.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Site Conditions: Do not proceed with installation until space is conditioned to meet manufacturer's recommendations and all wet work is complete.

3.2 PREPARATION

- A. Measure each wall area and establish layout of acoustical treatments.
- B. Assure equal border widths at opposite edges of each wall.
- C. Coordinate panel layout with mechanical and electrical fixtures.

3.3 INSTALLATION

- A. Install wall panels by attaching the panels to an existing wall per the manufacturers written instructions, as shown on Drawings.
- B. All field fabricated edge details will be finished in accordance with manufacturer's written Installation instructions.

3.4 CLEAN-UP COMPLETION

- A. Clean exposed surfaces of acoustic wall panels that have become soiled during handling and installation according to manufacturer's recommended cleaning instructions.
- C. Replace damaged panels.
- D. Upon completion of the work, remove surplus materials, rubbish and debris resulting from the wallcovering installation. Leave areas in neat clean and orderly condition.

END OF SECTION 09 84 13

SECTION 09 91 00 - INTERIOR PAINTING

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:

- Painting and finishing of interior and exterior exposed items and surfaces throughout the project, except as otherwise indicated.
- 2. Surface preparation, priming and coats of paint specified are in addition to shop-priming and surface treatment specified under other sections of the work.
- 3. Field painting of exposed bare and covered pipes and ducts, and hangers, exposed steel and iron work, and primed metal surfaces of equipment installed under the mechanical and electrical work, except as otherwise noted.
- B. "Paint", as used herein, is defined as all coating systems materials, including primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate or finish coats.
- C. Paint all exposed surfaces except where the natural finish of the material is specifically noted as a surface not to be painted. Where items or surfaces are not specifically mentioned, paint these the same as adjacent similar materials or areas.
- D. Paint prefinished metal items such as:
 - 1. Door light stops and moldings.
 - 2. Prefinished door frames.
 - 3. Door astragals and moldings.
 - 4. Fire extinguisher cabinets.
 - Electric Panel covers
- E. Color Coding and Identification: Is specified in respective sections of Divisions 21 through Division 28.
- F. Colors: As selected by Architect.

1.3 PAINTING NOT INCLUDED:

- A. The following categories of work are not included as part of the field-applied finish work or are included in other sections of these specifications.
 - 1. Shop Priming: Unless otherwise specified, shop priming of ferrous metal items is included under the various sections for structural steel, miscellaneous metal, hollow metal work, and similar items. Also, for fabricated components such as architectural woodwork, wood casework, and shop-fabricated or factory-built mechanical and electrical equipment or accessories.
 - 2. Pre-Finished Items: Unless otherwise indicated, do not include painting when factory-finishing is specified for such items as (but not limited to) metal toilet enclosures, prefinished partition systems, acoustic materials, architectural woodwork and casework,

- light fixtures, switchgear and distribution cabinets. Prefinished items to be painted are hereinbefore indicated.
- 3. Concealed Surfaces: Unless otherwise indicated, painting is not required on surfaces such as walls or ceilings in concealed areas and generally inaccessible areas, foundation spaces, furred areas, utility tunnels, pipe spaces, duct shafts and elevator shafts.
- 4. Finished Metal Surfaces: Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials will not require finished painting. (Note: Copper tubing and piping is not a finished metal.)
- 5. Operating Parts and Labels:
 - a. Moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sinkages, sensing devices, motor and fan shafts will not require finished painting.
 - b. Do not paint over code-required labels, such as Underwriters' Laboratories and Factory Mutual, or equipment identification, performance rating, name, or nomenclature plates. Permanently remove all other labels, prior to painting.

1.4 QUALITY ASSURANCE:

- A. Product Data: For information only, submit copies of manufacturer's technical information including paint label analysis and application instructions for each material proposed for use.
 - 1. Submit a list of manufacturer's products proposed for use.
 - Upon approval of the list, submit a detailed schedule of each surface to be painted, and include the specific sealer, primer, underbody and finish coats proposed for each such surface.
 - 3. After approval is granted, submit complete color catalog(s) for color selections.
- B. Samples: Submit samples for review of color and texture only. Compliance with all other requirements is the exclusive responsibility of the Trade Contractor. Provide a listing of the material and application for each coat of each finish sample.
 - 1. On actual wood surfaces, provide two 12" x 12" samples of each natural and stained wood finish as required. Label and identify each as to location and application.
- C. Maintenance Sample Stock: Provide the Owner with one (1) gallon, air-tight covered, of each applied paint color for future use. Identify each container with the manufacturer's name, number and color designation.
- D. Submit certification that materials proposed herein conform to the above requirements and to the fire test requirements of ASTM E84. Class "A" 0-25 Flame Spread.
 - 1. Flame Spread Rating: Provide materials with ratings in accordance with NFPA #101, "Life Safety Code", 25 or less in exit ways, corridors, stairways, storage rooms or other areas of high hazard; 75 or less elsewhere.
- E. VOC Compliance: Provide LOW VOC materials conforming to the State and local regulations as relating to VOC/VOS requirements at the time of application, and as follows:
 - VOC Compliance: All paints and coatings must comply with Green Seal Testing Program Limits as follows:
 - a. Non-Flat Primer / Paint: 150g/L. VOC Limit
 - b. Flat Primer / Paint: 50g/L. VOC Limit

F. Mock-Up:

- 1. Before proceeding with the Work of this Section, finish one complete space or item of each color scheme required. Show selected colors, finish textures, materials and workmanship.
- 2. Accepted sample spaces or items will serve as the standard for similar work throughout the project.

1.5 DELIVERY AND STORAGE:

A. Delivery:

- 1. Deliver all materials to the job site in original, new and unopened packages and containers bearing manufacturer's name and label, and application instructions thereon.
- 2. Provide labels on each container with the following information:
 - a. Name of title of material.
 - b. Fed. Spec. number, if applicable.
 - c. Manufacturer's stock number.
 - d. Manufacturer's name.
 - e. Contents by volume, for major pigment and vehicle constituents.
 - f. Thinning instructions.
 - g. Application instructions.

B. Storage:

 Provide a secure space for the storage of all paint materials and equipment for the exclusive use of this work and maintain and leave it free from fire hazards due to improperly stored rags or thinners.

1.6 JOB CONDITIONS:

- A. Apply water-base paints when the temperature of surfaces to be painted and the surrounding air temperatures are between 50 degrees F. and 90 degrees F., unless otherwise permitted by the paint manufacturer's printed instructions.
- B. Apply solvent-thinned paints when the temperature of surfaces to be painted and the surrounding air temperatures are between 45 degrees F. and 95 degrees F., unless otherwise permitted by the paint manufacturer's printed instructions.
- C. Do not apply paint in snow, rain, fog or mist; or when the relative humidity exceeds 85% or to damp or wet surfaces, unless otherwise permitted by the paint manufacturer's printed instructions.
 - 1. Continue painting during inclement weather, if the areas and surfaces to be painted are enclosed and heated within the temperature limits specified by the paint manufacturer during application and drying periods.

PART 2 - PRODUCTS

2.1 COLORS AND FINISHES:

- A. Painting, surface treatments and finishes are indicated in the "schedules" of the contract documents.
 - 1. Allow a total of 25% of painting in "public" spaces for "accent" colors, as selected.
- B. See Drawings for color schedule. Final color selection by Architect.
 - 1. Provide the necessary compatible base color for the selected finish colors. Should color coverage appear to be a problem, notify the Architect prior to base coat application. Sample areas may be required (approximately four areas of four-square feet each).
 - 2. Use representative colors when preparing samples for review.
- C. Upon completion of the first coat, notify the Architect for his review and approval. This review and approval procedure may be done on a room-by-room basis so as not to impede the progress of the work.

- D. Color Pigments: Pure, non-fading, applicable types to suit the substrates and service indicated.
 - 1. Lead content in the pigment, if any, is limited to contain no more than 0.06% lead, as lead metal based on the total non-volatile (dry-film) of the paint by weight.
- E. Paint Coordination: Provide finish coats, compatible with prime paints used. Review other sections of these specifications in which prime paints are to be provided to ensure compatibility of total coatings system for various substrates. Upon request, furnish information on characteristics of finish materials proposed for use, to ensure compatible prime coats are used. Provide barrier coats over incompatible primers or remove and reprime, as required. Notify the Architect, in writing, of any anticipated problems using specified coating systems with substrates primed by others.

2.2 MATERIAL QUALITY:

- A. Provide the best quality grade of the various types of coatings as regularly manufactured by acceptable paint materials manufacturers. Materials not displaying the manufacturer's identification as a standard, best-grade product will not be acceptable.
- B. Exterior Paint Manufacturers:
 - 1. Sherwin Williams, as specified.
 - 2. Benjamin Moore, as specified.
 - 3. Or equivalent products by the following: PPG Industries or Devoe
- C. Interior Paint Manufacturers:
 - 1. Sherwin-Williams Co. "Harmony" Coating System as specified.
 - 2. Benjamin Moore Company "Eco-Spec", as specified.
 - 3. Or equivalent products by the following:
 - a. PPG Industries "Pure Performance" Low VOC line
 - b. Devoe "Wonder-Pure" Low VOC line
- D. Proprietary names, used to designate colors or materials, are not intended to imply that products of the named manufacturers are required to the exclusion of equivalent products of other manufacturers.
- E. Provide undercoat paint produced by the same manufacturer as the finish coats. Use only thinners approved by the paint manufacturer and use only within recommended limits.

2.3 EXTERIOR PAINT SYSTEMS:

- A. Provide the following paint systems for the various substrates, as indicated.
- B. Concrete Masonry Units, Concrete, and Stucco:

1st coat - Sherwin-Williams Loxon Exterior Acrylic Masonry Acrylic Primer - A24W300 Series 2nd coat - Sherwin-Williams Loxon Exterior Masonry Acrylic Flat Coating - A24W301 Series 3rd coat - Sherwin-Williams Loxon Exterior Masonry Acrylic Flat Coating - A24W301 Series

or;

1.

1st coat - Benjamin Moore Acrylic Masonry Sealer- 066 2nd coat - Benjamin Moore Super Spec 100% Acrylic Exterior Flat - 183

3rd coat - Benjamin Moore Super Spec 100% Acrylic Exterior Flat - 183

C. Ferrous Metal: (including steel doors and frames, overhead doors, coiling doors, handrails, etc.)
Gloss Finish: (4 mils wet, 1.3 mils dry per coat)

1st Coat - S-W All Surface Enamel Latex Primer, A41W210 (10 mils wet, 5 mils dry)

2nd Coat - S-W A-100 Exterior Latex Gloss, A8 Series 3rd Coat - S-W A-100 Exterior Latex Gloss, A8 Series (4 mils wet, 1.3 mils dry per coat)

Semi-Gloss Finish: (3-5 mils dry per coat)

1st Coat - S-W All Surface Enamel Latex Primer, A41W210 (10 mils wet, 5 mils dry) 2nd Coat - S-W Metalatex Semi-Gloss Coating, B42 Series 3rd Coat - S-W Metalatex Semi-Gloss Coating, B42 Series

First coat not required on items delivered shop primed.

or;

1st coat - Benjamin Moore M07 Universal Metal Primer- M07 2nd coat - Benjamin Moore D.T.M. Acrylic (Semi-Gloss M29) (Gloss M28) 3rd coat - Benjamin Moore D.T.M. Acrylic (Semi-Gloss M29) (Gloss M28)

D. Galvanized/Zinc Coated Metal: (architecturally exposed structural steel, including fascia; if not aluminum)

Gloss Finish: (4 mils wet, 1.3 mils dry per coat)

1st Coat - S-W All Surface Enamel Latex Primer, A41W210 (10 mils wet, 5 mils dry) 2nd Coat - S-W A-100 Exterior Latex Gloss, A8 Series 3rd Coat - S-W A-100 Exterior Latex Gloss, A8 Series

Semi-Gloss Finish (3-5 mils dry per coat)

1st Coat - S-W All Surface Enamel Latex Primer, A41W210 (10 mils wet, 5 mils dry) 2nd Coat - S-W Metalatex Semi-Gloss Coating, B42 Series 3rd Coat - S-W Metalatex Semi-Gloss Coating, B42 Series

or;

1st coat - Benjamin Moore M04 Acrylic Metal Primer - M04 2nd coat - Benjamin Moore D.T.M. Acrylic (Semi-Gloss M29) (Gloss M28) 3rd coat- Benjamin Moore D.T.M. Acrylic (Semi-Gloss M29) (Gloss M28)

E. Woodwork: (Wood Trim, architectural woodwork, not including wood decks, not including stair treads/risers)

Latex System, Low Sheen

1st coat: S-W Exterior Latex Wood Primer B42W8041 (4 mils wet, 1.5 mils dry per coat) 2nd coat: S-W A-100 Exterior Latex Low Sheen, A12 Series (4 mils wet, 1.5 mils dry per coat) 3rd coat: S-W A-100 Exterior Latex Low Sheen, A12 Series (4 mils wet, 1.5 mils dry per coat)

F. Latex System, Satin Finish

1st coat: S-W Exterior Latex Wood Primer B42W8041 (4 mils wet, 1.5 mils dry per coat)
 2nd coat: S-W A-100 Exterior Latex Satin A82 Series (4 mils wet, 1.5 mils dry per coat)
 3rd coat: S-W A-100 Exterior Latex Satin A82 Series (4 mils wet, 1.5 mils dry per coat)

Latex System, Gloss Finish

1st coat: S-W Exterior Latex Wood Primer B42W8041 (4 mils wet, 1.5 mils dry per coat) 2nd coat: S-W A-100 Exterior Latex Gloss, A8 (4 mils wet, 1.3 mils dry per coat) 3rd coat: S-W A-100 Exterior Latex Gloss, A8 (4 mils wet, 1.3 mils dry per coat)

Latex System, Flat Finish

1st Coat: S-W Exterior Latex Wood Primer, B42W8041 (4 mils wet, 1.4 mils dry) 2nd Coat: S-W A-100 Exterior Latex Flat, A6 Series (4 mils wet, 1.2 mils dry per coat) 3rd Coat: S-W A-100 Exterior Latex Flat, A6 Series (4 mils wet, 1.2 mils dry per coat)

- G. Prefinished Cellular PVC Trim
- H. 1st coat: S-W product that is 100% Acrylic Latex Paint with Light Reflective Value (LRV) of 55 or higher.
- I. Aluminum: (including roof top mechanical units; fascia, if not zinc coated) Semi-Gloss Finish (3-5 mils dry per coat)

1st Coat: S-W Metalatex Semi-Gloss Coating, B42 Series 2nd Coat: S-W Metalatex Semi-Gloss Coating, B42 Series 3rd Coat: S-W Metalatex Semi-Gloss Coating, B42 Series

Gloss (4 mils wet, 1.3 mils dry per coat)

1st Coat: S-W A-100 Exterior Latex Gloss, A8 Series 2nd Coat: S-W A-100 Exterior Latex Gloss, A8 Series 3rd Coat: S-W A-100 Exterior Latex Gloss, A8 Series 4 mils wet, 1.3 mils dry per coat)

or;

1st coat - Benjamin Moore M04 Acrylic Metal Primer - M04 2nd coat - Benjamin Moore D.T.M. Acrylic (Semi-Gloss M29) (Gloss M28) 3rd coat - Benjamin Moore D.T.M. Acrylic (Semi-Gloss M29) (Gloss M28)

2.4 LOW ODOR - LOW VOC COMPLIANT INTERIOR PAINTS

- A. Coordinate with Finish Schedule for material and colors required.
- B. Concrete Masonry Units:

1st coat - Sherwin-Williams Loxon Block Surfacer 2nd coat - Sherwin-Williams Harmony Interior Latex Eg-Shel B9 Series 3rd coat - Sherwin-Williams Harmony Interior Latex Eg-Shel B9 Series

or;

1st coat- Benjamin Moore Super Craft Latex Block Filler-285 2nd coat - Benjamin Moore Eco Spec Interior Latex Eggshell 223 3rd coat- Benjamin Moore Eco Spec Interior Latex Eggshell 223

C. Gypsum Drywall System (except ceilings):

1st coat - Sherwin-Williams Harmony Interior Latex Primer B11W900 2nd coat - Sherwin-Williams Harmony Interior Latex Eg-Shel B9 Series 3rd coat - Sherwin-Williams Harmony Interior Latex Eg-Shel B9 Series

or;

1st coat- Benjamin Moore Eco Spec Interior Latex Primer Sealer-231 2nd coat - Benjamin Moore Eco Spec Interior Latex Eggshell 223 3rd coat- Benjamin Moore Eco Spec Interior Latex Eggshell 223 D. Ferrous Metals: (for all exposed to view metal, in finished rooms, including grilles, diffusers, piping, ducts, conduit, metal doors and frames and miscellaneous metals. When concealed from view and in mechanical equipment rooms, spot prime, only):

1st coat - Sherwin-Williams DTM Acrylic Primer/Finish

2nd coat - Sherwin-Williams Harmony Interior Latex Eg-Shel B9 Series

3rd coat - Sherwin-Williams Harmony Interior Latex Eg-Shel B9 Series

or;

1st coat - Benjamin Moore M04 Acrylic Metal Primer-M04

2nd coat - Benjamin Moore Eco Spec Interior Latex Eggshell 223

3rd coat- Benjamin Moore Eco Spec Interior Latex Eggshell 223

E. Wood:

1st coat - Sherwin-Williams PrepRite Classic Primer B28 Series or Harmony Inter Latex Primer B11W900

2nd coat - Sherwin-Williams Harmony Interior Latex Eg-Shel B9 Series

3rd coat - Sherwin-Williams Harmony Interior Latex Eg-Shel B9 Series

or;

1st coat- Benjamin Moore Regal FirstCoat 216 Interior Latex Primer and Underbody-216

2nd coat - Benjamin Moore Eco Spec Interior Latex Eggshell 223

3rd coat- Benjamin Moore Eco Spec Interior Latex Eggshell 223

F. Galvanized/Zinc Coated Metal: (for all exposed to view metal, in finished rooms, including metal decking, ducts, conduit, grilles, diffusers, miscellaneous metals):

Semi-Gloss Finish (4 mils wet, 1.6 mils dry per coat)

1st Coat - S-W ProCryl Universal Primer, B66-310 Series (110 g/L)

2nd Coat - S-W Harmony Low Odor Interior Latex Semi-Gloss, B10 Series (0 VOC)

3rd Coat - S-W Harmony Low Odor Interior Latex Semi-Gloss, B10 Series (0 VOC)

G. Aluminum: (for all exposed to view items, including grilles, diffusers, louvers, ducts, conduit and miscellaneous items not prefinished)

Semi-Gloss Finish (4 mils wet, 1.6 mils dry per coat)

1st Coat - S-W ProCryl Universal Primer, B66-310 Series (110 g/L)

2nd Coat - S-W Harmony Low Odor Interior Latex Semi-Gloss, B10 Series (0 VOC)

3rd Coat - S-W Harmony Low Odor Interior Latex Semi-Gloss, B10 Series (0 VOC)

H. Woodwork: (other than painted items specified above and prefinished work - coordinate with Divisions 6 and 8)

1st coat - Sherwin-Williams Wood Classic Oil Stain - A48-200

2nd coat - Sherwin-Williams Wood Classic Satin Polyurethane Varnish - A67

3rd coat - Sherwin-Williams Wood Classic Satin Polyurethane Varnish - A67

Sand between second and third coats. Wipe clean.

or;

1st coat - Benjamin Moore Benwood Penetrating Stain - 234

2nd coat - Benjamin Moore Benwood Polyurethane Satin - 228

3rd coat - Benjamin Moore Benwood Polyurethane Satin - 228

Epoxy Systems (Water Base)

Gloss Finish (2.5 - 3 mils dry per coat)

1st Coat: S-W Water based Catalyzed Epoxy, B70W211/B60V15

2nd Coat: S-W Water based Catalyzed Epoxy, B70W211/ B60V15

Semi -Gloss Finish (2.5 - 3 mils dry per coat)

1st Coat: S-W Water based Catalyzed Epoxy, B70W211/ B60V25 2nd Coat: S-W Water based Catalyzed Epoxy, B70W211/ B60V25

PART 3 - EXECUTION

3.1 INSPECTION:

- A. Examine the areas and conditions under which painting work is to be applied and do not proceed with the work until unsatisfactory conditions have been corrected.
- B. Starting of painting work will be construed as acceptance of the surfaces and conditions within any particular area.
- C. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to the formation of a durable paint film.

3.2 PREPARATION:

A. New Substrates:

- 1. General: Perform preparation and cleaning procedures in strict accordance with the paint manufacturer's instructions and as specified, for each particular substrate condition.
 - a. Remove all hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish-painted or provide surface-applied protection prior to surface preparation and painting operations. Remove, if necessary, for the complete painting of the items and adjacent surfaces. Following completion of painting of each space or area, reinstall the removed items by workmen skilled in the trades involved.
 - b. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease prior to mechanical cleaning. Program the cleaning and painting so that contaminants from the cleaning process will not fall onto wet, newly-painted surfaces.
 - c. Equipment, factory primed, including but not limited to fire extinguisher cabinets; electric panels, in finished areas; grilles; diffusers; and similar equipment not indicated to be painted "electro-statically" shall be dulled by sanding with #00 sandpaper or other approved material prior to receiving finish coats. Remove all sanding residue with water-moistened rags or other approved method.
- 2. Cementitious Materials: Prepare cementitious surfaces of concrete, concrete block, and cement plaster to be painted by removing all efflorescence, chalk, dust, dirt, grease, oils, and by roughening as required to remove glaze.
 - a. Determine the alkalinity and moisture content of the surfaces by performing appropriate tests. If the surfaces are found to be sufficiently alkaline to cause blistering and burning of the finish paint, correct this condition before application of paint. Do not paint over surfaces where the moisture content exceeds that permitted in the manufacturer's printed directions.
 - b. Coordinate with Division 4. If liquid cleaning solutions are used, determine the condition of the surfaces for paint application.
 - c. Shot blast concrete floors scheduled to be painted to provide a surface texture to receive paint.
 - d. If approved, prepare concrete floor surfaces with a commercial solution of muriatic acid, or other etching cleaner, flush floor with clean water to neutralize acid, and allow to dry before painting. Test slabs for dryness prior to commencing painting.
- 3. Wood: Clean wood surfaces to be painted of all dirt, oil or other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sandpaper smooth those finished surfaces exposed to view, and dust off. Scrape and clean small, dry, seasoned knots and

apply a thin coat of white shellac or other recommended knot sealer, before application of the priming coat. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood-filler. Sandpaper smooth when dried.

- Wood Items Not Prefinished: Coordinate with respective sections of Divisions 6 and 8. If items are not prefinished, adhere to the following requirements:
 - 1) Prime, stain, or seal wood required to be job-painted immediately upon delivery to job. Prime edges, ends, faces, undersides, and backsides of such wood, including cabinets, counters, cases, paneling, etc.
 - 2) When transparent finish is required, use spar varnish for backpriming.
 - 3) Backprime paneling on interior partitions only where masonry, plaster or other wet wall construction occurs on backside.
 - 4) Seal tops, bottoms, and cut-outs of unprimed wood doors with a heavy coat of varnish or equivalent sealer immediately upon delivery to job.
- 4. Ferrous Metals: Clean ferrous surfaces, which are not galvanized or shop-coated, of oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning.
 - a. Coordinate with Division 4. Determine if liquid cleaning solutions have been removed from surfaces abutting masonry.
 - b. Wire brush or mechanically sand rust spots to bright metal and spot prime.
 - c. Touch-up shop-applied prime coats wherever damaged or bare, where required by other sections of these specifications. Clean and touch-up with the same type of shop primer.
- 5. Galvanized Surfaces: Clean free of oil and surface contaminate with an acceptable non-petroleum-based solvent.

3.3 MATERIALS PREPARATION:

- A. Mix and prepare painting materials in accordance with manufacturer's directions.
- B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.
- C. Stir materials before application to produce a mixture of uniform density and stir as required during the application of the materials. Do not stir surface film into the material. Remove the film and if necessary, strain the material before using.

3.4 APPLICATION:

- A. General:
 - 1. Apply paint in accordance with the manufacturer's directions. Use applicators and techniques best suited for the substrate and type of material being applied.
- B. Apply primer, intermediate and finish coats to not less than the manufacturer's recommended wet film and dry film thicknesses and spreading rates for each of the various types of materials specified.
 - 1. Verify mil thickness, wet or dry, by use of recommended gauges.
- C. Apply additional coats when undercoats, stains or other conditions show through the final coat of paint, until the paint film is of uniform finish, color and appearance. Give special attention to ensure that all surfaces, including edges, corners, crevices, welds and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
- D. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Paint surfaces behind permanently-fixed equipment or furniture with prime coat only before final installation of equipment.

- E. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, non-specular black paint.
- F. Paint the back sides of access panels, and removable or hinged covers to match the exposed surfaces.
- G. Finish doors on tops, bottoms and side edges the same as the faces, unless otherwise indicated.
- H. Sand lightly between each succeeding enamel or varnish coat.
- I. Omit the first coat (primer) on metal surfaces which have been shop-primed and touch-up painted, unless otherwise indicated.
- J. Scheduling Painting:
 - 1. Apply the first-coat material to surfaces that have been cleaned, pretreated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
 - 2. Allow sufficient time between successive coatings to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and the application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.
- K. Minimum Coating Thickness: Apply each material at not less than the manufacturer's recommended spreading rate, to establish a total dry film thickness as indicated or, if not indicated, as recommended by coating manufacturer.
- L. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to those items exposed to view on the building exterior, in mechanical equipment rooms and in finished spaces.
 - 1. Mechanical items to be painted include, but are not limited to, the following:
 - a. Roof appurtenances including fan housings, exhaust hoods, fan covers, vent stacks, vent covers and grilles.
 - b. Convectors, radiation units, cabinet heaters, unit ventilators.
 - c. Piping, pipe hangers and supports.
 - d. Heat exchangers.
 - e. Tanks.
 - f. Ductwork, insulation.
 - g. Motors and mechanical equipment and support.
 - h. Accessory items, including grilles, diffusers and louvers.
 - 2. Electrical items to be painted include, but are not limited to, the following:
 - a. Conduit and fittings.
 - b. Panels.
 - c. Panel backboards.
- M. Prime Coats: Apply a prime coat of material which is required to be painted or finished, and which has not been prime coated by others.
 - Recoat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects due to insufficient sealing.
 - 2. Apply prime coat to all surfaces including surfaces indicated to receive other finishes.
- N. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other surface imperfections will not be acceptable.

- O. Transparent (Clear) Finishes: Use multiple coats to produce glass-smooth surface film of even luster. Provide a finish free of laps, cloudiness, color irregularity, runs, brush marks, orange peel, nail holes or other surface imperfections.
 - 1. Provide satin finish for final coats, unless otherwise indicated.
- P. Completed Work: Match approved samples for color, texture and coverage. Remove, refinish or repaint work not in compliance with specified requirements.

3.5 CLEAN-UP AND PROTECTION:

- A. Clean-up: During the progress of the work, remove from the site all discarded paint materials, rubbish, cans and rags at the end of each workday.
 - Upon completion of painting work, clean window glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.
- B. Protection: Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting, as acceptable to the Architect.
 - 1. Provide "Wet Paint" signs as required to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.
 - 2. At the completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces.

END OF SECTION 09 91 00

SECTION 10 14 00 - SIGNAGE

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 the following:
 - 1. Dimensional non-illuminated characters.
- B. Related Sections include the following:

1.3 DEFINITIONS

A. ADA-ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines."

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show fabrication and installation details for signs.
 - Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
 - 2. Provide message list, typestyles, graphic elements, including tactile characters and Braille, and layout for each sign.
- C. Samples for Verification: For each of the following products and for the full range of color, texture, and sign material indicated, of sizes indicated:
 - 1. Dimensional Characters: Full-size Samples of each type of dimensional character (letter).
 - 2. Acrylic Sheet: 8 by 10 inches (200 by 250 mm) for each color required.
 - 3. Plastic: 8 by 10 inches (200 by 250 mm) for each color required.
 - 4. Accessories: Manufacturer's full-size unit.
- D. Sign Schedule: Use same designations indicated on Drawings. Architect to confirm.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Warranty: Special warranty specified in this Section.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Fabricator of products.
- B. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful inservice performance.
- C. Source Limitations for Signs: Obtain each sign type indicated from one source from a single manufacturer.
- D. Regulatory Requirements: Comply with applicable provisions in ADA-ABA Accessibility Guidelines, ICC/ANSI A117.1 and State Building Code Requirements.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Deterioration of embedded graphic image colors and sign lamination.
 - 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Acrylic Sheet: ASTM D 4802, Category A-1 (cell-cast sheet), Type UVA (UV absorbing).
 - 1. Thickness: 0.125-inch

2.2 DIMENSIONAL CHARACTERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Take Form
 - 2. Inpro
 - 3. Apco Signs

- C. Characters: Produce characters with smooth flat faces, sharp corners, and precisely formed lines and profiles, free of pits, scale, sand holes, and other defects. Comply with the following requirements.
 - 1. Character Material: Acrylic, Plastic.
 - 2. Thickness: As required by RI Accessibility Code 2009
 - 3. Colors: As selected by Architect from manufacturer's full range of color.
 - 4. Mounting: Concealed mounting and fastening.
 - 5. Lettering: As required by RI Accessibility Code 2009, must contain braille.
 - 6. Acrylic: match existing ADA compliant building signage.
 - a. Colors: As selected by Architect from manufacturer's full range of colors.

2.3 PHOTOLUMINESCENT SIGNS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- C. Basis-of-Design Product: Subject to compliance with requirements, provide a comparable product by one of the following:
 - 1. Evenlite Inc.
 - 2. Holophane Corporation.
 - 3. Isolite Corporation.
 - 4. Johnsonite; Division of Duramax, Inc.
 - 5. As indicated on electrical drawings
- D. Photoluminescent Signs: Self-contained, as follows:
 - Manufacturer's standard frame with translucent lettering and transparent polycarbonate face. Match existing.
 - 2. Exit sign, UL 924.
 - Mounting: As indicated.
 - a. mounted with concealed anchors.
 - 4. Face Color: match existing
 - 5. Frame Color: match existing
 - 6. Service Life: 10 years min.

2.4 FABRICATION

- A. General: Provide manufacturer's standard signs of configurations indicated.
 - 1. Conceal fasteners if possible; otherwise, locate fasteners where they will be inconspicuous.

2.5 FINISHES, GENERAL

A. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.6 ACRYLIC SHEET FINISHES

A. Colored Coatings for Acrylic Sheet: For copy and background colors, provide colored coatings, including inks, dyes, and paints, that are recommended by acrylic manufacturers for optimum adherence to acrylic surface and that are UV and water resistant for five years for application intended.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
- B. Verify that items, including anchor inserts, and electrical power are sized and located to accommodate signs.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Locate signs and accessories where indicated, using mounting methods of types described and complying with manufacturer's written instructions.
 - 1. Install signs level, plumb, and at heights indicated, with sign surfaces free of distortion and other defects in appearance.
 - 2. Interior Wall Signs: Install signs on walls adjacent to latch side of door where applicable. Where not indicated or possible, such as double doors, install signs on nearest adjacent walls. Locate to allow approach within 3 inches (75 mm) of sign without encountering protruding objects or standing within swing of door.
- B. Wall-Mounted Signs: Comply with sign manufacturer's written instructions except where more stringent requirements apply.
 - 1. Two-Face Tape: Mount signs to smooth, nonporous surfaces. Do not use this method for vinyl-covered or rough surfaces.
 - 2. Hook-and-Loop Tapes: Mount signs to smooth, nonporous surfaces.
 - 3. Magnetic Tape: Mount signs to smooth, nonporous surfaces.
 - 4. Silicone-Adhesive Mounting: Attach signs to irregular, porous, or vinyl-covered surfaces.
 - 5. Shim Plate Mounting: Provide 1/8-inch- (3-mm-) thick, concealed aluminum shim plates with predrilled and countersunk holes, at locations indicated, and where other mounting methods are not practicable. Attach plate with fasteners and anchors suitable for secure attachment to substrate. Attach panel signs to plate using method specified above.

- 6. Mechanical Fasteners: Use nonremovable mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.
- C. Bracket-Mounted Signs: Provide manufacturer's standard brackets, fittings, and hardware for mounting signs that project at right angles from walls and ceilings. Attach brackets and fittings securely to walls and ceilings with concealed fasteners and anchoring devices to comply with manufacturer's written instructions.
- D. Dimensional Characters: Mount characters using standard fastening methods to comply with manufacturer's written instructions for character form, type of mounting, wall construction, and condition of exposure indicated. Provide heavy paper template to establish character spacing and to locate holes for fasteners.
 - 1. Projected Mounting: Mount characters at projection distance from wall surface indicated. a. Match existing ADA signage.

3.3 CLEANING AND PROTECTION

A. After installation, clean soiled sign surfaces according to manufacturer's written instructions. Protect signs from damage until acceptance by Owner.

3.4 SCHEDULE OF SIGNAGE

- A. At the minimum the following signs shall be required:
- B. Room names and numbers with Braille. (Approx. 8" x 8").

END OF SECTION 10 14 00

SECTION 112429 - FACILITY FALL PROTECTION, NON-PENETRATING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Non-penetrating fall protection systems, including:
 - 1. Roof hatch rail systems.

1.2 REFERENCES

- A. General: Applicable edition of references cited in this Section is current edition published on date of issue of Project specifications, unless otherwise required by building code in force.
- B. American National Standards Institute (ANSI):
 - 1. A21.1 Safety Requirements for Floor and Wall Openings, Railings and Toe Boards.
 - 2. A58.1 Minimum Design Loads in Buildings and Other Structures.
 - 3. A117.1 Accessible and Usable Buildings and Facilities.
- C. Code of Federal Regulations (CFR):
 - 1. 29 CFR 1910.28 Duty to have fall protection and falling object protection.
 - 2. 29 CFR 1910.29 Fall protection systems and falling object protection criteria and practices.
- D. Association for Materials Protection and Performance (AMPP):
 - 1. SSPC PAINT 20: Organic Zinc Rich Primer, Type II.
 - 2. SSPC PA 1: Shop, Field, and Maintenance Coating of Metals.

1.3 COORDINATION

- A. Coordinate selection of fall protection and fall restraint devices and attachment provisions with Owner's safety program and Owner-provided personal protection equipment.
- B. Coordinate layout and location of facility fall protection with Architect.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of fall protection and accessory, including brackets and fasteners.
 - 1. Submit manufacturer's published literature including structural properties data, corrosion resistance, certificates of compliance, and test reports as applicable.
- B. Shop Drawings: Show locations and layout of fall protection components; include dimensioned plans, elevations, sections, and details of installation.

1.5 INFORMATION SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, according to ASTM E894 and ASTM E935.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.
- B. Executed copies of warranty.

1.7 QUALITY ASSURANCE

A. 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.

1.8 PRODUCT DELIVERY AND STORAGE

- A. Deliver manufactured materials in original, unbroken pallets, packages, containers, or bundles bearing the label of the manufacturer.
- B. Store and handle materials carefully to prevent abrasion, cracking, chipping, twisting, other deformations, and other types of damage.

1.9 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components that fail in materials within specified warranty period.
 - 1. Warranty Period: Two (2) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide facility fall protection components by Tremco CPG Inc, Beachwood, OH, (800) 562-2728. Provide specified products or comparable products by one of the following:
 - 1. Fibergrate "Dynaround Hatchguard and Self-closing Gate.
 - 2. Bluewater Safety "Hatch Defender and Self-closing Gate".
 - 3. Manufacturer of comparable products, approved by the Architect.
- B. Single Source: Provide fall protection components from a single manufacturer through a single source, unless otherwise indicated.

2.2 PERFORMANCE REQUIREMENTS

- A. Occupational Safety and Health Standards: Provide fall protection components complying with requirements of 29 CFR 1910.28 and 1910.29 including structural performance.
- B. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Handrails and Top Rails of Guards:
 - a. Uniform load of 50 lbf/ ft. (0.73 kN/m) applied in any direction.
 - b. Concentrated load of 200 lbf (0.89 kN) applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
 - 2. Infill of Guards and Bottom Rails:
 - a. Concentrated load of 50 lbf (0.22 kN) applied horizontally on an area of 1 sq. ft. (0.093 sq. m).
 - b. Infill load and other loads need not be assumed to act concurrently.

2.3 RAIL SYSTEMS, NON-PENETRATING

- A. Fall Protection Rail Systems: Freestanding counterweighted fall protection safety railing system including pipe or tubing, fittings, and accessories complying with requirements of authorities having jurisdiction.
 - 1. Basis of Design Product: Tremco, TremSafe Guardrail S Fall Protection System.
 - 2. Configuration/System:
 - a. Roof hatch protection: TremSafe Hatch Guard.
 - 3. Application: Flat or low slope roof.
 - a. Maximum Slope without Parapet: 3.6 degrees (0.75:12).
 - 4. Uprights: 42-inch (1067-mm) by 1.5625-inch (41-mm) steel pipe factory assembled with manufacturer's standard clamp fittings accepting railings, adjustable up to 11 deg. from vertical.
 - 5. Mounting Bases: Class 30 gray iron material cast with four receiver posts, with anti-skid rubber pad base.
 - a. Receiver Posts: Shall have a positive locking system into slots that allow rails to be mounted in any direction. Friction locking systems are not allowed. Receiver posts shall have drain holes.
 - 6. Railings: 1-5/8-inch (41-mm) OD, hot-rolled, pickled, electric weld tubing, free of sharp edges and snag points.

- 7. Upright and Railing Finish: Galvanized, exposed.
- 8. Accessories: Provide manufacturer's standard accessories, with clamping hardware, preformed corners, and splice kits, in finish to match railings
 - a. Self-Closing Safety Gate: Tremco, TremSafe Self-Closing Safety Gate; fully assembled gate shall be capable of swinging in either direction by inverting installation position. Gate size shall be laterally adjusted from minus 1-1/4 inch (32 mm) to plus 2-1/2 inch (64 mm).
 - 1) Width: As selected from manufacturer's standard range.
 - 2) Top Rail: 42 inches (1067 mm), minimum.
 - 3) Bottom Rail: (533 mm) 21 inches, minimum.
 - 4) Hardware: Provide the following:
 - a) Gate Hardware: U-Bolts.
 - b) Universal Hinge Assembly: Fits railing types up to 2 inches (51 mm) OD or flat surface mounting.
 - c) Railing adapter kit.
 - d) Self-Closing Springs: Two stainless steel torsion springs.
 - 5) Finish: Hot Dipped Galvanized w/ Powder Coat.
 - a) Color: As selected from manufacturer's full range.

2.4 MISCELLANEOUS MATERIALS

- A. Hardware: Manufacturer's standard hardware as required for a complete installation; corrosion resistant, and identical to hardware utilized in tested assemblies meeting performance requirements.
- B. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

2.5 FABRICATION

- A. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- B. Form work true to line and level with accurate angles and surfaces.
- C. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
- D. Form changes in direction by inserting prefabricated elbow fittings.

- E. Close exposed ends of railing members with prefabricated end fittings.
- F. Brackets, Flanges, Fittings, and Anchors: Provide brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.

2.6 STEEL AND IRON FINISHES

- A. Comply with ASTM A123/A123M for hot-dip galvanized railings.
- B. Comply with ASTM A153/A153M for hot-dip galvanized hardware.
- C. Powder-Coat Finish: Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.
- B. Verify that roof assembly is sound, dry, smooth, clean, sloped for drainage, securely anchored and ready for placement of fall protection.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare surfaces using the methods recommended by the manufacturer for the substrate, under the project conditions.

3.3 INSTALLATION OF NON-PENETRATING FALL PROTECTION DEVICES

- A. Install fall protection to comply with requirements of 29 CFR 1910.28 and 1910.29, and authorities having jurisdiction.
- B. Install fall protection in accordance with manufacturer's written instructions.
- C. Set fall protection components accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
 - 1. Do not weld, cut, or abrade surfaces of components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
 - 2. Set components plumb within a tolerance of 1/8 inch in 3 feet (4 mm in 1 m).
 - 3. Align horizontal members so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet (6 mm in 3.5 m).
- D. Test action of operable components of facility fall protection equipment. Adjust for proper operation.

E. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

3.4 REPAIR AND CLEANING

- A. Protect installed products until completion of the project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.
 - 1. Touchup Painting: Immediately after erection, clean bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 requirements for touching up shop-painted surfaces.
 - 2. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas, and repair galvanizing to comply with ASTM A780/A780M.
 - 3. Replace components that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 112429

SECTION 122413 - ROLLER WINDOW SHADES

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:
 - Motor-operated roller shades with single rollers
- B. Related Requirements:
 - Division 06 Section " Rough Carpentry" for wood blocking and grounds for mounting roller shades and accessories.
 - 2. Division 07 Section "Joint Sealants" for sealing the perimeters of installation accessories for light-blocking shades with a sealant.
 - 3. Division 26 Sections for electrical service and connections for motors, controls, limit switches, and other powered devices and for system disconnect switches for motor-operated shades.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include styles, material descriptions, construction details, dimensions of individual components and profiles, features, finishes, and operating instructions for roller shades.
- B. Shop Drawings: Show fabrication and installation details for roller shades, including shadeband materials, their orientation to rollers, and their seam and batten locations.
 - 1. Motor-Operated Shades: Include details of installation and diagrams for power, signal, and control wiring.
- C. Samples: For each exposed product and for each color and texture specified, 10 inches (250 mm) long.
- D. Samples for Initial Selection: For each type and color of shadeband material.
 - 1. Include Samples of accessories involving color selection.
- E. Samples for Verification: For each type of roller shade.
 - 1. Shadeband Material: Not less than [10 inches (250 mm)] [3 inches (76 mm)] square. Mark inside face of material if applicable.
 - 2. Roller Shade: Full-size operating unit, not less than 16 inches (400 mm) wide by 36 inches (900 mm) long for each type of roller shade indicated.

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- 3. Installation Accessories: Full-size unit, not less than 10 inches (250 mm) long.
- F. Roller-Shade Schedule: Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Certificates: For each type of shadeband material, signed by product manufacturer.
- C. Product Test Reports: For each type of shadeband material, for tests performed by a qualified testing agency.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roller shades to include in maintenance manuals.

1.6 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. Roller Shades: Full-size units equal to 5 percent of quantity installed for each size, color, and shadeband material indicated, but no fewer than 2 units.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Fabricator of products.
- B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
 - 1. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver roller shades in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not install roller shades until construction and finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

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B. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - Basis-of-Design Product:
 - a. Mecho Shade Systems, Inc.
 - b. Electroshade Automated IQ2 AC

Subject to compliance with requirements, provide comparable product by one of the following:

- 2. Draper Inc.
- 3. Hunter Douglas Contract.
- B. Source Limitations: Obtain roller shades from single source from single manufacturer.

2.2 MOTOR-OPERATED, SINGLE-ROLLER SHADES

- A. Motorized Operating System: Provide factory-assembled, shade-operator system of size and capacity and with features, characteristics, and accessories suitable for conditions indicated, complete with electric motor and factory-prewired motor controls, power disconnect switch, enclosures protecting controls and operating parts, and accessories required for reliable operation without malfunction. Include wiring from motor controls to motors. Coordinate operator wiring requirements and electrical characteristics with building electrical system.
 - 1. Electrical Components: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 - 2. Electric Motor: Manufacturer's standard tubular, enclosed in roller.
 - a. Electrical Characteristics: Single phase, 24VDC
 - 3. Remote Control: Electric controls with NEMA ICS 6, Type 1 enclosure. Provide the following for remote-control activation of shades:
 - a. Group Control Station: rocker-style, wall-switch-operated control station with open, close, and center off functions for single-switch group control.
 - b. Sun Sensor Control: Adjustable system consisting of digital displays detecting sun intensity and responding by automatically adjusting shades.
 - c. Timer Control: Clock timer, programmable for regular events.
 - d. Microprocessor Control: Electronic programmable means for setting, changing, and adjusting control features; isolated from voltage spikes and surges.
 - e. Color: As selected by Architect from manufacturer's full range
 - 4. Crank-Operator Override: Crank and gearbox operate shades in event of power outage or motor failure.
 - 5. Limit Switches: Adjustable switches interlocked with motor controls and set to stop shades automatically at fully raised and fully lowered positions.

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6. Operating Features:

- Group switching with integrated switch control; single faceplate for multiple switch cutouts.
- Capable of interface with network control system. b.
- Capable of accepting input from building automation control system.
- d. Override switch.
- Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall В. Rollers: thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.
 - Direction of Shadeband Roll: Regular, from back of roller 1.
 - Shadeband-to-Roller Attachment: Manufacturer's standard method 2.
- C. Mounting Hardware: Brackets or endcaps, corrosion resistant and compatible with roller assembly, operating mechanism, installation accessories, and mounting location and conditions indicated.
- D. Roller-Coupling Assemblies: Coordinated with operating mechanism and designed to join up to three inline rollers that are operated by one roller drive-end assembly.

E. Shadebands:

- Shadeband Material: Light-blocking fabric: Blackout. 1.
- 2. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.
 - Type: Enclosed in sealed pocket of shadeband material a.
 - Color and Finish: As selected by Architect from manufacturer's full b.

F. Installation Accessories:

- 1. Front Fascia: Aluminum extrusion that conceals front and underside of roller and operating mechanism and attaches to roller endcaps without exposed fasteners.
 - Shape: L-shaped a.
 - Height: Manufacturer's standard height required to conceal roller and shadeband b. when shade is fully open, but not less than 4 inches (102 mm)
- 2. Exposed Headbox: Rectangular, extruded-aluminum enclosure including front fascia, top and back covers, endcaps, and removable bottom closure to match shade and fabric color. Submit for approval.
 - Manufacturer's standard in height required to enclose roller and a. shadeband when shade is fully open, but not less than 4 inches (102 mm).
- 3. Endcap Covers: To cover exposed endcaps.
- Closure Panel and Wall Clip: Removable aluminum panel designed for installation at 4. bottom of site-constructed ceiling recess or pocket and for snap-in attachment to wall clip without fasteners.
- 5. Side Channels: With light seals and designed to eliminate light gaps at sides of shades as shades are drawn down. Provide side channels with shadeband guides or other means of aligning shadebands with channels at tops.

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- 6. Bottom (Sill) Channel or Angle: With light seals and designed to eliminate light gaps at bottoms of shades when shades are closed.
- 7. Installation Accessories Color and Finish: As selected from manufacturer's full range.

2.3 SHADEBAND MATERIALS

- A. Shadeband Material Flame-Resistance Rating: Comply with NFPA 701 Testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- B. Light-Blocking Fabric: Opaque fabric, PVC free with opaque acrylic backing. Greenguard certified and EDP certified.
 - 1. Source: Mecho, (Basis of Design).
 - 2. Type: Equinox Blackout 0100 Series
 - 3. Content: 60% Acrylic coating and 40% polyester
 - 4. Thickness: .021 inches
 - 5. Weight: 14.075 oz per square yard
 - 6. Roll Width: verify required field width
 - 7. Cleaning: disinfect with hydrogen peroxide
 - 8. Color: 0104 Sandstone. Submit full range for Architects' review

2.4 ROLLER-SHADE FABRICATION

- A. Product Safety Standard: Fabricate roller shades to comply with WCMA A 100.1, including requirements for flexible, chain-loop devices; lead content of components; and warning labels.
- B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F (23 deg C):
 - 1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which shade is installed less 1/4-inch (6 mm) per side or 1/2-inch (13-mm) total, plus or minus 1/8 inch (3.1 mm). Length equal to head-to-sill or -floor dimension of opening in which shade is installed less 1/4 inch (6 mm), plus or minus 1/8 inch (3.1 mm).
- C. Shadeband Fabrication: Fabricate shadebands without battens or seams to extent possible except as follows:
 - 1. Vertical Shades: Where width-to-length ratio of shadeband is equal to or greater than [1:4] provide battens and seams at uniform spacings along shadeband length to ensure shadeband tracking and alignment through its full range of movement without distortion of the material.
 - Railroaded Materials: Railroad material where material roll width is less than the required width of shadeband and where indicated. Provide battens and seams as required by railroaded material to produce shadebands with full roll-width panel(s) plus, if required, one partial roll-width panel located at top of shadeband.

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PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, accurate locations of connections to building electrical system, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ROLLER-SHADE INSTALLATION

- A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.
 - 1. Opaque Shadebands: Located so shadeband is not closer than [2 inches (51 mm)] to interior face of glass. Allow clearances for window operation hardware.
- B. Electrical Connections: Connect motor-operated roller shades to building electrical system.

3.3 ADJUSTING

A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

- A. Clean roller-shade surfaces after installation, according to manufacturer's written instructions.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that roller shades are without damage or deterioration at time of Substantial Completion.
- C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain motor-operated roller shades.

END OF SECTION 122413

SECTION 123661 - SIMULATED STONE COUNTERTOPS

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. Solid-surface-material countertops [and backsplashes].
- B. Related Sections:
 - 1. Division 6 Section "Interior Woodwork."
 - 2. Division 22 Section "see drawings for specifications

1.3 ACTION SUBMITTALS

- A. Product Data: For countertop materials
- B. Shop Drawings: For countertops. Show materials, finishes, edge and backsplash profiles, methods of joining, and cutouts for plumbing fixtures.
- C. Samples for Initial Selection: For each type of material exposed to view.
- D. Samples for Verification: For the following products:
 - 1. Countertop material, 6 inches (150 mm) square.
 - 2. Wood trim, 8 inches (200 mm) long.
 - 3. One full-size solid-surface-material countertop, with front edge 8 by 10 inches (200 by 250 mm), of construction and in configuration specified.

1.4 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions of countertops by field measurements after base cabinets are installed but before the countertop fabrication is complete.

1.5 COORDINATION

A. Coordinate locations of utilities that will penetrate countertops or backsplashes.

PART 2 - PRODUCTS

2.1 SOLID-SURFACE-MATERIAL COUNTERTOPS

- A. Configuration: Provide countertops with the following style:
 - 1. Front: 3/4-inch (19-mm) bullnose
- B. Countertops: 3/4-inch thick, solid surface material
- C. Fabrication: Fabricate tops in one piece with shop-applied edges (and backsplashes) unless otherwise indicated. Comply with solid-surface-material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
 - 1. Fabricate with loose backsplashes for field assembly.
 - 2. Install integral sink bowls in countertops in the shop.

2.2 COUNTERTOP MATERIALS

- A. Certified Wood Materials: Fabricate countertops with wood and wood-based products produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."
- B. Composite Wood and Agrifiber Products: Provide products that comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- C. Plywood: Exterior softwood plywood complying with DOC PS 1, Grade C-C Plugged, touch sanded.
- D. Adhesives: Adhesives shall not contain urea formaldehyde.
- E. Adhesives: Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- F. Solid Surface Material: Homogeneous solid sheets of filled plastic resin complying with ANSI SS1.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following the following:
 - a. Basis of Design: Corian, E. I. du Pont de Nemours and Company.
 - b. Other acceptable manufacturers:
 - 1. Wilsonart
 - 2. Livingstone
 - 2. Type: Provide Standard Type or Veneer Type made from material complying with requirements for Standard Type, as indicated unless Special Purpose Type is indicated.
 - 3. Colors and Patterns: As selected by Architect from manufacturer's full range.
 - 4. selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install countertops level to a tolerance of 1/8 inch in 8 feet (3 mm in 2.4 m).
- B. Fasten countertops by screwing through corner blocks of base units into underside of countertop. Pre-drill holes for screws as recommended by manufacturer. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
 - 1. Install backsplashes and end splashes (where indicated) to comply with manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
 - 2. Seal edges of cutouts in particleboard sub tops by saturating with varnish.

END OF SECTION 123661

SECTION 270000 - GENERAL COMMUNICATIONS REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. The scope of work specified by these documents shall result in the provision, installation and testing of the following Telecommunications Communications infrastructure, systems and equipment.
 - 1. Sustainable Design Intent

Comply with project requirements intended to achieve sustainable design, measured and documented according to LEED Green Building Rating System of the US Green Building Council. Refer to section 0108113, SUSTAINABLE DESIGN REQUIREMENTS for certification level and certification requirements.

- 1. All Voice and Data Wiring
 - a. Contractor to provide all new CAT6 cabling at all telecom outlet locations. Refer to drawings for outlet locations.
 - 1) All new CAT6 cables shall be terminated onto new CAT6 patch panels and labeled as indicated in Telecommunications Labeling Detail Sheet.
- 2. Audio / Video Displays (wiring only)
 - a. Contractor to provide all new CAT6 cabling at all telecom outlet locations. Refer to drawings for outlet locations.
- B. Systems shall utilize digital technology to integrate the following systems into a single network linking them to a central site:
 - 1. LAN Systems
 - a. Locally, the facility will be provided with a Local Area Network for all local data and video connectivity.
 - 2. Security
 - a. Security devices shall be furnished, installed and configured by others:
 - CAT6 UTP cables shall be provided by contractor for security camera locations. All cables shall be terminated onto new CAT6 patch panels in nearest (MDF). Security devices shall be terminated in independent CAT6 patch panels and shall not be shared with other telecommunications outlet types.
- C. Telephone system (VoIP)
 - 1. The telephone system shall be furnished, installed and programmed by the owner.
- D. These systems shall be integrated by means of an in building Network of cables.
 - 1. Cable Infrastructure
 - a. All technology cabling for the new facility will be integrated with the data network, telephone, intercom, and security systems, utilizing Category 6 Cabling for data and telecommunications between the jack plate and either MDF or IDF shall be category 6 as indicated in drawings and field conditions.

- 2. Based on distance limitations from MDF or IDF to the devices, the cabling distance standard of 290' for data networks shall be adhered to.
- 3. All wiring will be in stub-ups or free air to J-hooks.

The Telecommunications Contractor shall ensure that the General Contractor and Painting Contractor acknowledge that painting of or over spray any single or group of 4 pair horizontal telecommunications Category 6 cable is not allowed. Any painted or over sprayed cable(s) shall be replaced at the telecommunications and/or painting contractor's expense. Painted Cable will not be covered as part of an extended warranty. Painted cable in addition to obscuring the print legend may act as an accelerant or create an additional smoke hazard in the event of a fire and as such this is considered a life safety issue.

1.3 SUMMARY OF WORK

A. Associated "T" drawing series attached

1.4 REGULATIONS AND CODE COMPLIANCE

- A. All work and materials shall conform to and be installed, inspected and tested in accordance with the most current governing rules and regulations of federal, state and local governmental agencies.
- B. The following is a list of codes and standards that will apply to this project:
 - 1. Federal Occupational Safety and Health Administration OSHA.
 - 2. National Life Safety Code, NFPA 101.
 - 3. National Electrical Code (NEC), NFPA 70
 - 4. Underwriters Laboratory (UL).
 - 5. Factory Mutual and/or Owner's Insurance Carrier.
 - 6. ANSI/TIA Telecommunications Building Wiring Standards (Most current addition, revision and addenda), including, but limited to, the following compilation series of documents: 568, 570, 598, 606, 607, 758, , FIP 174, FIP175, FIP176,
 - 7. BICSI Telecommunications Distribution Methods Manual, Telecommunications Cabling Installation Manual, Customer-Owned Outside Plant Manual, LAN and Internetworking Design Manual.
 - 8. IEEE Standards.
 - 9. IEEE-SA National Electrical Safety Code (NESC)
 - 10. Federal Communications Commission.
 - 11. NEMA National Electrical Manufacturers' Association
 - 12. CSA Canadian Standards Association
 - 13. Owner's Environmental Health and Safety Standards.
 - 14. Owner's Construction Standards.
 - 15. ADA, Americans with Disabilities Act.

1.5 GLOSSARY

A. ANSI: American National Standards Institute

- B. ASME: American Society of Mechanical Engineers
- C. ASTM: American Society for Testing Materials
- D. BICSI: Building Industry Consulting Services International
- E. CSA: Canadian Standards Association
- F. FCC: Federal Communications Commission
- G. FM: Factory Mutual Insurance Company
- H. IEEE: Institute of Electrical and Electronics Engineers
- I. IRI: Industrial Rick Insurers
- J. ISO: International Standards Organization
- K. NEC: National Electrical Code (latest applicable edition
- L. NEMA: National Electrical Manufacturers' Association
- M. NESC: National Electrical Safety ode
- N. NFPA: National Fire Protection Association
- O. OSHA: Occupational Safety and Health Administration
- P. TIA: Telecommunications Industry Association
- Q. UFPO: Underground Facilities Protective Organization
- R. UL: Underwriter's Laboratories, Inc.

1.6 DEFINITIONS

- A. Approved / Approval: Written permission to use a material or system.
- B. As Called for: Materials, equipment including the execution specified/shown in the contract documents.
- C. Code Requirements: Minimum requirements
- D. Concealed: Work installed in pipe and duct shafts, chases or recesses, inside walls, above ceilings, in slabs or below grade.
- E. Design Equipment: Refer to the article, BASIS OF DESIGN.
- F. Design Make: Refer to the Article, BASIS OF DESIGN.
- G. Equal or Equivalent: Equally acceptable as determined by Owner's Representative.
- H. Exposed: Work not identified as concealed.

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- I. Final Acceptance: Owner acceptance of the project from Contractor upon certified by Owner's Representative.
- J. Furnish: Supply and deliver to installation location.
- K. Furnished by Others: Receive delivery at job site or where called for and installed.
- L. Inspection: Visual observations by Owner's site Representative.
- M. Install: Mount and connect equipment and associated materials ready or use.
- N. Labeled: Refers to classification by a standards agency.
- O. Make: Refer to the article, BASIS OF DESIGN.
- P. Or Approved Equal: Approved equal or equivalent as determined by Owner's Representative.
- Q. Owner's Representative: Mast Construction
- R. Prime Professional: Architect or Engineer having a contract directly with the Owner for professional services.
- S. Provide: Furnish, install and connect ready for use.
- T. Relocate: Disassemble, disconnect, and transport equipment to new locations, then clean, test, and install ready for use.
- U. Replace: Remove and provide new item.
- V. Review: A general contractual conformance check of specified products. W. Roughing: Pipe, duct, conduit, cabling, equipment layout and installation.
- W. Satisfactory: As specified in contract documents.
- X. Site Representative: Construction Manager or Owner's Inspector at the work site.
- Y. Refer to General Conditions of the Contract for additional definitions.

1.7 INTENT OF DRAWINGS

- A. The drawings are diagrammatic, unless detailed dimensioned drawings are included. Drawings show approximate locations of equipment, and fixtures. Exact locations are subject to the approval of the Owner's Representative.
- B. The Contractor should verify all dimensions locating the work and its relation to existing work, all existing conditions and their relation to the work and all man-made obstructions and conditions, etc. affecting the completion and proper execution of the work as indicated in the Contract Documents.
- C. Related Documents

1. Drawings, General Conditions, and Special Conditions related to this project are found in this Division, as well as the other Divisions included in the Contract Documents.

2.0 PRODUCTS

2.1 EQUIPMENT AND MATERIALS MINIMUM REQUIREMENTS:

A. Materials requirements:

- 1. All equipment and material for which there is a listing service shall bear a UL label.
- 2. Electrical equipment and systems shall meet UL Standards and requirements of the NEC and CSA. This listing requirement applies to the entire assembly. Any modifications to equipment to suit the intent of the specifications shall be performed in accordance with these requirements.
- 3. Equipment shall meet all applicable FCC Regulations
- 4. All materials, unless otherwise specified, shall be new and be the standard products of the manufacturer. Used equipment or damaged material will be rejected.
- 5. The listing of a manufacturer as "acceptable" does not indicate acceptance of a standard or catalogued item of equipment. All equipment and systems must conform to the Specifications and meet the quality of the design make.
- 6. Where applicable, all materials and equipment shall bear the label and listing of Underwriters Laboratory of Factory Mutual. Application and installation of all equipment and materials shall be in accordance with such labeling and listing.

2.3 CABLES

- A. Any cable associated with this Contract, passing through two or more floors shall be suitable, listed by a Nationally Recognized Testing Labortory (NRTL) and marked for use in a riser or plenum application. Riser cable shall minimally be CMR or OFNR rated per the National Electrical Code and shall meet all local and state codes.
- B. Any cable associated with this Contract shall be rated, listed by a Nationally Recognized Testing Labortory (NRTL) and marked for use in a plenum application, regardless if the ceiling is a ducted return air plenum or not. Cable shall be CMP rated per the National Electrical Code and shall meet all local and state codes.
- C. Voice copper backbone cables, if required, shall be twisted 24 AWG., contain a corrugated aluminum shield, be of the size indicated on the drawings and have the proper jacket classification per the NEC.
- D. All copper underground feeder cable associated with this Contract, if required, shall be suitable, listed and marked for use in a duct application per the National Electrical Code article 800 and shall meet all local codes. Copper underground cables shall be jell-filled, twisted 24 AWG., contain an overall corrugated shield, be of the size indicated on the drawings, shall have footage indicators imprinted on the cable jacket and shall meet REA/RUS specification PE-39 or PE-89.

2.4 FACTORY ASSEMBLED PRODUCTS

A. Provide maximum standardization of components to reduce spare part requirements.

- B. Manufacturers of equipment assemblies that include components made by others shall assume complete responsibility for final assembled unit.
 - 1. All components of an assembled unit need not be products of same manufacturer.
 - 2. Constituent parts, which are alike, shall be product of a single manufacturer.
 - Components shall be compatible with each other and with the total assembly for intended service.
- C. Components of equipment shall bear manufacturer's name or trademark, model number and serial number on a nameplate securely affixed in a conspicuous place, or cast integral with, stamped or otherwise permanently marked upon the components of the equipment.
- D. Major items of equipment that serve the same function must be the same make and model. Exception will be permitted if performance requirements cannot be met.

2.5 COMPATABILITY OF RELATED EQUIPMENT

- A. Equipment and materials installed shall be compatible in all respects with other items being furnished and with existing items so that a complete and fully operational system will result.
- B. Provide maximum standardization of components to reduce spare part requirements.
- C. Manufacturers of equipment assemblies that include components made by others shall assume complete responsibility for final assembled unit.
 - 1. All components of an assembled unit need not be products of same manufacturer.
 - 2. Constituent parts that are alike shall be product of a single manufacturer.
 - Components of equipment shall bear manufacturer's name or trademark, model number and serial number on a nameplate securely affixed in a conspicuous place, or cast integral with, stamped or otherwise permanently marked upon the components of the equipment.

2.6 LIFTING ATTACHMENTS

A. Equipment should have suitable lifting attachments to enable equipment to be lifted in its normal position. Lifting attachments shall withstand any handling conditions that might be encountered without bending or distortion of shape, such as rapid lowering and braking of load.

2.7 MISCELLANEOUS SUPPORTS

- A. Metal bars, plates, tubing, etc. shall conform to the following ASTM standards:
 - 1. Steel plates, shapes, bars, and grating ASTM A 36
 - 2. Cold-Formed Steel Tubing ASTM A 500
 - 3. Hot Rolled Steel Tubing ASTM A 500
 - 4. Steel Pipe ASTM A 53, Schedule 40, welded
- B. Metal Fasteners shall be Zinc-coated (type, grade and class as required)

2.8 FIRESTOPPING

- A. Firestopping for Openings through Fire and Smoke Rated Walls and Floor Assemblies shall be listed or classified by an approved independent testing laboratory for "Through-Penetration Firestop Systems." The system shall meet the requirements of "Fire Tests of Through-Penetration Firestops" designated ASTM E814.
- B. Inside of all conduits, the firestop system shall consist of a dielectric, water resistant, non-hardening, permanently pliable/re-enterable putty along with the appropriate damming or backer materials (where required). The sealant must be capable of being removed and reinstalled and must adhere to all penetrants and common construction materials and shall be capable of allowing normal wire/cable movement without being displaced.
- C. All conduit and sleeve openings shall be waterproofed or fireproofed in compliance with Fire Codes. Strict adherence to National and State Fire Codes, particularly firestopping will be required.
- D. All openings remaining around and inside all conduit, sleeves and cable penetrations to maintain the integrity of any fire rated wall, ceiling, floor, etc. shall be patched.
- E. All building conduits and sleeves installed and/or used under this contract shall be firestopped, or re- firestopped, upon cable placement through such passageways.
- F. Manufacturer's recommended installation standards must be closely followed (i.e. minimum depth of material, use of ceramic fiber and installation procedures).
- G. Provide firestop system seals at all locations where conduit, fiber, cable trays, cables/wires, and similar utilities pass through or penetrate fire rated wall or floor assembly. Provide firestop seal between sleeve and wall for drywall construction.
- H. The minimum required fire resistance ratings of the wall or floor assembly shall be maintained by the firestop system. The installation shall provide an air and watertight seal.
- I. The methods used shall incorporate qualities that permit the easy removal or addition of conduits or cables without drilling or use of special tools. The product shall adhere to itself to allow repairs to be made with the same material and permit the vibration, expansion and/or contraction of any items passing through the penetration without cracking, crumbling and resulting reduction in fire rating. Typical rating:
 - 1. Floors 3 hours
 - 2. Corridor walls 2 hours
 - 3. Offices ¾ hour
 - 4. Smoke partitions 3/4 1 hour
- J. Provide firestop pillows for existing cable tray penetrations through firewalls.

EXECUTION

3.1 ROUGH-IN

A. Due to small scale of drawings, it is not possible to indicate all offsets, fittings, changes in elevation, etc. Verify final locations for installation with field measurements and with the COMMUNICATIONS GENERAL REQUIREMENTS

equipment being connected. Verify exact location and elevations at work site prior to any rough in work. If field conditions, details, changes in equipment or shop drawing information require a significant change to the original documents, contact the owner's representative for approval before proceeding.

- B. All equipment locations shall be coordinated with other trades, other renovation projects, and existing conditions to eliminate interference with required clearances for equipment maintenance and inspection.
 - Coordinate work with other trades, other renovation projects, and existing conditions to determine exact routing of all cable tray, hangers, conduit, etc., before fabrication and installation. Coordinate with Technology Drawings. Verify with Owners Representative exact location and mounting height of all equipment in finished areas, such as equipment racks, communication and electrical devices. Coordinate all work with existing Architecture.
 - Where more than one trade is involved in an area, space or chase, all shall cooperate and install their own work to utilize the space equally between them in proportion to their individual requirements. There will be no priority schedule for trades. If, after installation of any equipment, piping, ducts, conduit, and boxes, it is determined that ample maintenance and passage space has not been provided, rearrange work and/or furnish other equipment as required for ample maintenance space. Any changes in the size or location of the material or equipment supplied or proposed, which may be necessary in order to meet field conditions or in order to avoid conflicts between trades, shall be brought to the immediate attention of the Owner's Representative and approval received before such alterations are made.
- C. Provide easy, safe, and code mandated clearances at equipment racks and enclosures, and other equipment requiring maintenance and operation.

3.2 CUTTING AND PATCHING

A. Cut and drill from both sides of walls and/or floors to eliminate splaying. Patch adjacent existing work disturbed by installation of new work including insulation, walls and wall covering, ceiling and floor covering, other finished surfaces. Patch and/or paint openings and damaged areas equal to existing surface finish. Cut openings in prefabricated construction units in accordance with manufacturer's instructions.

3.3 CONCEALMENT

A. Use existing conduit and surface raceway where possible and practicable. Conceal all contract work above ceilings and in walls, below slabs, and elsewhere throughout building. If concealment is impossible or impractical, notify Owner's Representative before starting that part of the work and install only after his review. In areas with no ceilings, install only after Owner's Representative reviews and comments on arrangement and appearance.

3.4 CHASES

A. General

- 1. Field verifies for correct size and location for all openings, recesses and chase.
- 2. Assume responsibility for correct and final location and size of such openings.

- 3. Rectify improperly sized, improperly located or omitted chases or openings due to faulty or late information or failure to check final location.
- Correct, by drilling, omitted or improperly located sleeves. Assume responsibility for all work and equipment damaged during course of drilling. Cap or firestop all unused conduits and sleeves.
- 5. Provide angle iron frame where openings are required for contract work.
- 6. Seal voids in fire rated assemblies with a firestopping seal system to maintain the fire resistance of the assembly. Provide 18 gauge-galvanized sleeves at fire rated assemblies. Extend sleeves 2" above floors.
- 7. In wall openings, drill or cut holes to suit. Provide 18 gauge galvanized sleeves at shafts and fire rated assemblies. Provide firestopping seal between sleeves and wall in drywall construction. Provide firestopping similar to that for floor openings.

3.5 WATERPROOFING

- A. The Contractor shall seal all foundation penetrating conduits and all service entrance conduits and sleeves to eliminate the intrusion of moisture and gases into the building. This requirement also includes spare conduits.
- B. Spare conduits shall be plugged with expandable plugs.
- C. All service entrance conduits through building shall be sealed or resealed upon cable placement.
- D. Conduits with cables in them shall be permanently sealed by firmly packing the void around the cable with oakum and capping with a hydraulic cement or waterproof duct seal.

3.6 SUPPORTS

A. Provide required supports, beams, angles, hangers, rods, bases, braces, straps, struts, and other items to properly support contract work. Supports shall meet the approval of the Owner's Representative. Modify studs, add studs, add framing, or otherwise reinforce studs in metal stud walls and partitions as required to suit contract work. If necessary, in stud walls, provide special supports from floor to structure above. For precast Panels/Planks and Metal Decks, support communication work as determined by manufacturer and Owner's Representative. Provide heavy gauge steel mounting plates for mounting contract work. Mounting plates shall span two or more studs. Size, gauge, and strength of mounting plates shall be sufficient for equipment size, weight, and desired rigidity.

3.7 GENERAL INSTALLATION REQUIREMENTS

- A. Coordinate ordering and installation of all equipment with long lead times or having a major impact on work by other trades so as not to delay the job or impact the schedule.
- B. Where mounting heights are not detailed or dimensioned, install systems, materials and equipment to provide the maximum headroom possible.
- C. Set all equipment to accurate line and grade, level all equipment and align all equipment components.

D. Provide all scaffolding, rigging, hoisting and services necessary for erection and delivery of equipment and apparatus furnished into the premises. These items shall be removed from premises when no longer required.

- E. No equipment shall be hidden or covered up prior to inspection by the owner's representative. All work that is determined to be unsatisfactory shall be corrected immediately.
- F. All work shall be installed level and plumb, parallel and perpendicular to other building systems and components.

3.8 IMPLEMENTATION

A. The contractor shall provide and install all hardware, software, connections and appurtenances required for fully operational systems.

END OF SECTION 270000

SECTION 270528 - PATHWAYS FOR COMMUNICATIONS SYSTEMS

PART 1 - GENERAL

Work of this Section is part of Filed Sub-Bid Section 260000

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Conduit, fittings and bodies, including multi-cell conduit.
 - 2. Riser flexible raceway (inner duct) and fittings.
 - Junction boxes pull boxes and gutters.
 - 4. Measured pull tape.
 - 5. J-Hooks.
 - 6. Wire Tray / Ladder Rack.

1.2 REFERENCES

- A. The publications listed below form a part of this specification. The publications are referred to in the text by basic designation only.
- B. Specific reference in specifications to codes, rules, regulations, standards, manufacturer's instructions or requirements of regulatory agencies shall mean the latest printed edition of each in effect at the date of contract unless the document is shown dated.

C. Conflicts:

- 1. Between referenced requirements: Comply with the one establishing the more stringent requirements.
- 2. Between referenced requirements and contract documents: Comply with the one establishing the more stringent requirements.

D. References:

- 1. American National Standards Institute (ANSI):
 - a. C80.1 Rigid Steel Conduit Zinc Coated.
 - b. C80.4 Fittings for Rigid Metal Conduit.
- Federal Specifications (FS):
 - a. W-C-58C Conduit Outlet Boxes, Bodies Aluminum and Malleable Iron.
 - b. W-C-1094 Conduit and Conduit Fittings Plastic, Rigid.
 - c. WW-C-566C Flexible Metal Conduit.
 - d. WW-C-581D Coatings on Steel Conduit
 - e. National Electrical Manufacturers Association (NEMA):
 - f. RN1 Polyvinyl-Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Electrical metallic Tubing.
 - g. TC2 Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80).

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- h. TC3 PVC Fittings for Use with Rigid PVC Conduit and Tubing.
- i. NEMA VE 1 Metal Cable Tray Systems.
- j. NEMA VE 2 Metal Cable Tray Installation Guidelines.
- 3. American Society for Testing and Materials International (ASTM)
 - ASTM A123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - b. ASTM A653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanized) by the Hot-Dip Process.
 - ASTM B633 Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.
- 4. Underwriters Laboratories Inc. (UL):
 - a. 514 B Fittings for Conduit and Outlet Boxes.
 - b. 651 Schedule 40 and 80 Rigid PVC Conduit.
 - c. 651A Type EB and A Rigid PVC Conduit and HDPE Conduit.
 - d. 1666 Standard for Riser Application for Optical Fiber Raceway.
- 5. National Fire Protection Association (NFPA) ANSI/NFPA 70 National Electrical Code (NEC).
- 6. ANSI/TIA-569-D-1, Telecommunications Pathways and Spaces
- 7. Building Industry Consulting Service International (BICSI) Telecommunications Distribution Methods Manual (TDMM).
- 8. Local, county, state and federal regulations and codes in effect as of date of purchase.
- 9. Equipment of foreign manufacture must meet U.S. codes and standards. It shall be
- 10. Indicate in the proposal the components that may be of foreign manufacture, if any, and the country of origin.

1.3 SUBMITTALS

- A. The Cable Contractor shall perform no portion of the work requiring submittal and review of record drawings, shop drawings, product data, or samples until the respective submittal has been approved by the Owner. Such work shall be in accordance with approved submittals.
- B. Qualifications: The Cable Contractor shall submit qualification data sheets for firms and persons as specified in the "Quality Assurance" article of this specification to demonstrate their capabilities and experience.
- C. Proposed product data sheets: The Cable Contractor shall submit catalog cut-sheets that include manufacturer, trade name, and complete model number for each product specified. Model number shall be handwritten and/or highlighted to indicate exact selection. Identify applicable specification section reference for each product.
- D. Coordination Drawings: The Cable Contractor shall submit coordination drawings showing coordination between communications pathways and other trades.
- E. Record Drawings: Furnish CAD drawings of completed work including cable ID numbers following the Owner's labeling standards. Submit in hardcopy (two full size and two half size) and electronic formats.

1.4 QUALITY ASSURANCE

A. Cable Contractor Qualifications:

- 1. The Cable Contractor shall submit references and other related evidence of installation experience for a period of three years prior to the issue date of this Specification.
- 2. All work shall be supervised on-site by a BICSI Registered Communications Distribution Designer (RCDD). Must demonstrate knowledge and compliance with all BICSI, TIA, UL, and NEC standards and codes. Cable Contractor shall submit proof of RCDD designation.
- B. Provided products shall meet the following requirements: Items of the same classification shall be identical. This requirement includes equipment, assemblies, parts, and components.
- C. Assure that the "as installed" system is correctly and completely documented including engineering drawings, manuals, and operational procedures in such a manner as to support maintenance and future expansion of the system.

1.5 WARRANTY

A. General Warranty: Refer to General and Special Provisions Document for warranty requirements.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify dimensions in areas of installation by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- B. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating units without field measurements. Coordinate supports, adjacent construction, and fixture locations to ensure actual dimensions correspond to established dimensions.

1.7 DELIVERY AND STORAGE

- A. Equipment shall be delivered in original packages with labels intact and identification clearly marked.
- B. Equipment shall not be damaged in any way and shall comply with manufacturer's operating specifications.
- C. Equipment and components shall be protected from the weather, humidity, temperature variations, dirt, dust, or other contaminants. Equipment damaged prior to system acceptance shall be replaced at no cost to the Owner.

1.8 COORDINATION

- A. Field coordinate installation of conduit and cable tray with other trades to ensure clearance requirements are met.
- B. Coordinate with all contractors providing equipment outside the scope of this contract.

PART 2 - PRODUCTS

2.1 PATHWAYS

A. Definition:

- 1. For the purpose of this document, the term "Telecommunication Pathways" defines a portion of the communication infrastructure. Telecommunication Pathways include products provided for the routing, segregation and support of telecommunication cabling both inside and outside of facilities.
- B. Primary Industry Standard Requirements for Telecommunication Pathways:
 - 1. Comply with ANSI/TIA-569-D-1

2.2 LADDER RACK

- A. Ladder Rack is to be constructed of steel or brushed aluminum, at least 24 wide and at least 2" deep
 - 1. Manufacture: CPI # 11252-724
- B. Ladder Rack must be installed with the proper mounting hardware to securely fasten the Ladder Rack to the walls and secured above Rack/Cabinets with pencils rod to deck above.
- C. Cable Tray Supports:
 - 1. Shall be placed so that the support spans do not exceed maximum span per manufacture and NEC load rating. Supports shall be constructed from 12 gauge steel formed shape channel members 1-5/8 inch by 1-5/8 inch with necessary hardware, Unistrut or equal.
 - 2. Trapeze hanger's supports shall be supported by 1/2inch (minimum) diameter rods. Cable trays installed adjacent to walls shall be supported on wall mounted brackets. Support shall be loading condition with a safety factor of 3.Pencil rod to be secured to of the Floor-Mounted Racks.
 - 3. Butt-Splice Kit.
 - a. Junction-Splice Kit.
 - b. Heavy-Duty Butt-Splice Kit.
 - c. Heavy-Duty Junction-Splice Kit.
 - d. Adjustable Junction-Splice Kit.
 - e. Runway-Splice Kit.
 - f. Butt Swivel Splice Kit.

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- g. Junction Swivel Splice Kit.
- h. Vertical Swivel Splice Kit.
- D. Accessories provided shall be manufacturer approved and furnished as required for a complete system as defined by the manufacturer to protect, support, bond, ground and install a cable tray system. Accessories shall consist of but are not limited to; section splice plates, expansion plates, blind-end plates, specially designed ladder dropouts, barriers, etc.

2.3 CABLE BASKET

- A. Cable tray shall be the primary pathway for cable distribution from MDF/IDF's to work outlets:
 - 1. Comply with ANSI/TIA-569-D-1.
 - 2. Cable tray shall be 12" x 4" to accommodate known cable load and provide for 100% expansion.
 - 3. Cable tray shall be attached directly to the building structure and shall not be supported by any other building systems such as electrical conduits, HVAC duct work, and plumbing or sprinkler pipe.
 - 4. Comply with the requirements of all related NEMA, ASTM and BICSI standards.

2.4 J-HOOKS

- A. J-Hooks shall be the secondary pathway for cable distribution from TRs to work outlets:
 - 1. Comply with ANSI/TIA-569-D-1.
 - J-Hooks shall be sized to accommodate known cable load and provide for 100% expansion.
 - J-Hooks shall be attached directly to the building structure and shall not be supported by any other building systems such as electrical conduits, HVAC duct work, and plumbing or sprinkler pipe.
 - 4. Comply with the requirements of all related NEMA, ASTM and BICSI standards.

2.5 CONDUIT SYSTEMS

- A. Conduit pathways shall be provided by the electrical contractor as complete Conduit systems including:
 - 1. Conduit with pull strings.
 - 2. Pull box / Junction box assemblies.
 - 3. Mounting / attachment hardware.
 - 4. Labeling.
 - 5. Grounding.
- B. Conduit Fill Calculations.
 - 1. Calculate and provide conduit systems with sizing and quantities to assure conduit wire/cable fill does not exceed pulling tensions, rush limits and performance properties of cables installed.

C. Conduit Trade Sizes

- 1. Typical conduit trade sizes used in Inside Plant Telecommunication Pathways are:
 - a. Trade Size 3/4 Inch EMT.
 - b. Trade Size 1 Inch EMT (Minimum Conduit size without written exception by OAT Engineer).
 - c. Trade Size 1 Inch EMT.
 - d. Trade Size 2 Inch EMT.
 - e. Trade Size 3 Inch EMT.
 - f. Trade Size 4 Inch EMT.
 - g. Various trade size "Flex" conduit (typically limited to 6 feet in length).

2.6 FIRESTOPPING

- A. Fire stopping shall be provided for Telecommunication Pathways at penetration areas for fire rated walls and floors. Fire stopping shall meet or exceed the hour rating of wall or floor penetrated by the Telecommunication Pathway.
 - 1. Fire stopping shall comply with latest release of NEC NFPA 70.
 - 2. Fire stopping products and applications shall provide containment of smoke, fumes and flame with performance in accordance with ASTM E814-00 and UL 1479.
 - 3. Local Authority Having Jurisdiction -Building Code Requirements.
- B. Types of Fire stopping hardware and materials include:
 - 1. Mechanical Fire stopping Products Conduit Sleeves
 - a. Conduit Sleeves.
 - b. Cable Tray Penetrations.
 - Penetration Frame Products.
 - 2. Non-Mechanical Fire stopping Products:
 - a. Putties.
 - b. Caulks.
 - c. Cementitious / Foams / Intumescent Materials.
 - d. Prefabricated Pillows, Blocks and Blankets.
 - 3. Fire stopping products shall be installed per manufacturer's practices.
 - 4. Manufactures include:
 - a. Specified Technologies Inc. (STI) SpecSeal
 - b. 3M Products.
 - c. CSD Sealing Systems.
 - d. Approved Equal.

2.7 GROUNDING

- A. Comply with requirements in Division 26 Section "Grounding and Bonding for Electrical Systems." for grounding conductors and connectors.
- B. Telecommunications Main Bus Bar:
 - 1. Connectors: Mechanical type, cast silicon bronze, solderless compression-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.

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- 2. Ground Bus Bar: Each communication room depicted in the drawings shall be provisioned with a Telecommunications Grounding Busbar (TGB) meeting or exceeding the following requirements:
 - a. Each bar shall be installed with isolated standoff mounts.
 - b. Minimal bar size is %" thick x 2" wide x 10" long.
 - c. The TGB's shall be electroplated and pre-drilled for connector attachment to 6 AWG ground cables.
 - d. Holes spaced 1-1/8 inches apart.
- C. A #6 AWG stranded copper wire cable shall be extended between Telecommunication Room (TR) Busbars (TGB) and the Telecommunications Main Grounding Busbar (TMGB) (located in MDF) via conduit and cable tray systems as shown on the drawings.
- D. Ground conductor shall be provided, installed and utilized for equipment, termination, cable tray, equipment rack and computer equipment grounding, including telephone systems.
- E. All grounding material and work shall comply with the National Electric Code (NEC Chapter 8), Local and State regulations as well as ANSI-J/STD-607-C.
- F. Coordinate with the electrical power trades for grounding wiring interface to an approved connection to the building electrical power service panel ground source. Provide #6 AWG stranded copper bonding conductor extending from the electrical ground source to the Telecommunication Main Grounding Busbar (TMGB) located in the MDF.
- G. Provide ground cable #6 AWG stranded copper bonding conductor installed from the TMGB to each of the TR's as depicted in the project drawings ground wiring riser diagram.
- H. 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. Cooper B-Line P/N: SB-477or equal.

2.8 IDENTIFICATION PRODUCTS

- A. Comply with ANSI/TIA-606-C and UL 969 for labeling materials, including label stocks, laminating adhesives, and inks used by label printers.
- B. Comply with requirements in Division 26 Section "Identification for Electrical Systems."

2.9 MANUFACTURERS

- A. Subject to compliance with requirements, manufacturers that may be incorporated in the work, include, but are not limited to the following:
 - 1. PVC Rigid Conduit:
 - a. Carlon.
 - b. Robroy Industries, Inc.
 - c. Cantex.
 - d. Or equal.
 - 2. Conduit Fittings and Bodies:

- a. Crouse-Hinds, Appleton Electric.
- b. Killark Electric Manufacturing Company.
- c. O-Z/Gedney.
- d. Or equal
- J-HOOKS:
 - a. Erico/Caddy.
 - b. Or equal.
- 4. Measured pull tape pull tape printed with sequential footage markings for accurate measurements:
 - a. Fibertek.
 - b. Condux International.
 - c. Or equal.
- 5. Cable Basket / Ladder Rack
 - a. Belden Ladder Rack.
 - b. Cablo-Fil.
 - c. CPI.
 - d. Or equal.

2.10 MATERIALS

A. Conduits

- 1. All conduits, fittings, junction and pull boxes shall be UL rated.
- 2. All conduits, fittings, junction and pull boxes shall comply with the NEC.
- B. Non-metallic conduits are not permitted in above ground installations. Conversion fittings are required for non-metallic (below ground) to metallic (above ground) transitions. Exceptions will be granted to accommodate the transition from outside plant to inside plant to comply with code requirements
- C. Measured Pull Tape
 - 1. Pre-lubricated, woven polyester, low friction, and high abrasion resistant yarn
 - 2. Minimum average tensile strength shall be 1250 lbs. for 1%-inch and smaller conduits and inner duct.
 - 3. Minimum average tensile strength shall be 1800 lbs. for conduits larger than 1% inch.
- D. Pull Boxes, Junction Boxes and Gutters
 - 1. All junction boxes, gutters and pull boxes shall comply with NEC Article 314.
 - 2. All junction boxes, gutters and pull boxes shall meet the following minimum material requirements:
 - a. 16-gauge steel or heavier.
 - b. Seams shall be continuously welded and grounded smooth.
 - c. External screws and clamps.
 - d. External mounting feet (where possible).
 - e. Oil-resistant gasket and adhesive.
 - f. ANSI 61 gray polyester powder coating inside and out over phosphatized surface.
 - g. UL 50 type 12.

- 3. All junction boxes, gutters and pull boxes shall be provided with bushings for conduits and/or cabling.
- 4. All junction boxes, gutters and pull boxes shall be securely installed.
- 5. All junction boxes, gutters and pull box sizes for single and multiple conduit runs shall comply with BICSI TDMM.

E. CABLE BASKET, CABLE TRAY and LADDER RACK

- 1. Rated for use with Category 6a cable
- 2. Sized for support of quantity of cable installed at each location
- 3. Metallic and/or plenum rated.

F. J-HOOKS

- 1. Rated for use with Category 6a cable
- 2. Installed as shown in drawings
- 3. Metallic and/or plenum rated.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Cable Contractor's on-site RCDD supervisor shall review, approve and stamp all shop drawings, coordination drawings and record drawings.
- B. Verify conduit system is properly sized for cables (minimum one inch, unless otherwise noted in Drawings).
- C. Verify general conduit route following Drawings.
- D. Verify substrates to which work is connected and determine detail requirements for proper support.
- E. Verify proper location and type of rough-in for conduit terminations.

3.2 INSTALLATION

- A. Coordinate locations with other trades prior to installation.
- B. Install work following drawings, manufacturer's instructions and approved submittal data.
- C. Installation plans and requests for information (RFIs) shall be reviewed by Cable Contractor's on-site RCDD.
- D. All work shall be supervised and reviewed by Cable Contractor's on-site RCDD.
- E. Locations and Types:

J-HOOKS

- Install J-Hooks directly to building structure. Hooks may not be supported by any other building system - e.g. HVAC ducts, electrical conduits, plumbing or ceiling supports.
- b. J-Hooks shall be installed every 48".
- c. J-Hooks must be install straight level & plumb.
- d. Cables shall be neatly bundled and secured to hooks using Velcro or Velcro type straps or fasteners.
- e. Cable Contractor's RCDD supervisor shall coordinate with drawings of other disciplines to determine availability of space for installation.

2. CABLE TRAY/ LADDER RACK

- a. Install cable tray in telecomm closets as depicted on drawings
- b. Position, elevation and routing of cable tray shall be coordinated with GC to ensure there is no conflict with equip-net furnished and installed by any other contractor on site (e.g. HVAC, Electrical, Plumbing etc.)
- Cable tray shall be secured directly to building structure and not supported by any other equipment or service element (e.g. ceiling grid, black iron, HVAC supports etc.)
- d. Ladder within the telecommunications rooms (MDF, IDF) may be supported to the above the equipment racks within these rooms.
- e. Support system shall be straight, level and plumb and show no signs of sagging or drooping at any point.
- Cables in these trays shall be neatly bundled and secured using Velcro straps ONLY
- All tray and ladder rack shall be grounded according to NEMA, BICSI and local jurisdiction requirements
- h. Cable Contractor's RCDD supervisor shall coordinate with drawings of other disciplines to determine availability of space for installation.

CABLE BASKET

- a. Install cable basket in hallway ceilings as depicted on attached drawings telecomm closets as depicted on drawings
- b. Position, elevation and routing of cable basket shall be coordinated with GC to ensure there is no conflict with equipment furnished and installed by any other contractor on site (e.g. HVAC, Electrical, Plumbing etc.)
- Cable basket shall be secured directly to building structure and not supported by any other equipment or service element (e.g. ceiling grid, black iron, HVAC supports etc.)
- d. Support system shall be straight, level and plumb and show no signs of sagging or drooping at any point.
- e. Cables in these baskets shall be neatly bundled and secured using Velcro straps ONLY
- f. All Cable basket shall be grounded according to NEMA, BICSI and local jurisdiction requirements
- g. Cable Contractor's RCDD supervisor shall coordinate with drawings of other disciplines to determine availability of space for installation.

F. Design Considerations:

- 1. Conduit fill shall comply with ANSI/TIA -569-D.
- 2. The minimum bend radius is six times the conduit inside diameter (ID) for a two inch conduit or less.

- The minimum bend radius is 10 times the conduit ID for a conduit greater than two inches.
- 4. Below grade conduit shall extend three inches above finished floor (AFF) with a bushing.
- 5. Ceiling conduit or sleeves shall extend six inches below finished ceiling with a bushing.
- 6. All stubbed conduit ends shall be provided with a ground bushing.
- 7. All conduit penetrations shall comply with all applicable fire codes. All conduit penetrations in fire-rated walls or floors shall be sealed and fire proofed to at least the rating of the penetration area.
- 8. Conduits shall be routed in the most direct route, with the fewest number of bends possible.
- 9. There shall be no continuous conduit sections longer than 100 feet. For runs that total more than 100 feet, insert junction or pull boxes (or gutters if appropriate) so that no continuous run between pull boxes is greater than 100 feet.
- 10. There shall be no more than two 90-degree bends (180 degrees total) between conduit pull boxes.
- 11. Changes in direction shall be accomplished with sweeping bends observing minimum bend radius requirements above. Do not use pull boxes for direction changes unless specifically designated otherwise in the Drawings.
- 12. Unless otherwise noted in the Drawings, conduits entering pull boxes shall be aligned with exiting conduits.
- G. Identification: Refer to Section 270553 Identification for Communications Systems for labeling requirements.

3.3 CLEANING

A. Remove all unnecessary tools and equipment, unused materials, packing materials and debris from each area where Work has been completed unless designated for storage.

3.4 ACCEPTANCE

- A. Once all work has been completed, test documentation has been submitted and approved, and the Owner is satisfied that all work has been completed in accordance with contract documents; the Owner will notify Cable Contractor in writing of formal acceptance of the system.
- B. Acceptance shall be subject to completion of all work and submittal and approval of full documentation as described above.

END OF SECTION 270528

SECTION 270553 - IDENTIFICATION FOR COMMUNICATIONS SYSTEMS

PART 1 - GENERAL

Work of this Section is part of Filed Sub-Bid Section 260000

1.1 SUMMARY

- A. This Section includes labeling and identification standards for:
 - 1. Horizontal and backbone cabling and termination hardware
 - 2. Conduits and pathways
 - 3. Equipment cabinets, racks, frames and enclosures
- B. As-builts shall contain matching label information

1.2 REFERENCES

- A. The publications listed below form a part of this specification. The publications are referred to in the text by basic designation only.
- B. Specific reference in specifications to codes, rules, regulations, standards, manufacturer's instructions, or requirements of regulatory agencies shall mean the latest printed edition of each in effect at the date of contract unless the document is shown dated.

C. Conflicts:

- 1. Between referenced requirements: Comply with the one establishing the more stringent requirements.
- 2. Between referenced requirements and contract documents: Comply with the one establishing the more stringent requirements.

D. References:

- ANSI/TIA -606-C Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
- 2. International Standards Organization/International Electromechanical Commission (ISO/IEC) DIS11801, January 6, 1994
- 3. Building Industry Consulting Services International (BICSI) Telecommunications Distribution Methods Manual (TDMM)
- 4. Local, county, state and federal regulations and codes in effect as of date of purchase.
- 5. Equipment of foreign manufacture must meet U.S. codes and standards. It shall be indicated in the proposal the components that may be of foreign manufacture, if any, and the country of origin

1.3 SUBMITTALS

A. Product Data:

1. The Contractor shall submit catalog cut-sheets that include manufacturer, trade name, and complete model number for each product specified.

IDENTIFICATION FOR TELECOMMUNICATIONS SYSTEMS

- 2. Model number shall be handwritten and/or highlighted to indicate exact selection. Identify applicable specification section reference for each product.
- B. Qualification Data: For firms and persons specified in "Quality Assurance" Article.

1.4 QUALITY ASSURANCE

- A. Provided products shall meet the following requirements: Items of the same classification shall be identical. This requirement includes equipment, assemblies, parts, and components.
- B. Assure that the "as installed" system is correctly and completely documented including engineering drawings, manuals, and operational procedures in such a manner as to support maintenance and future expansion of the system.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with requirements, manufacturers that may be incorporated in the work, include, but are not limited to the following:
- B. Labels and Labeling System
 - 1. Basis of Design: Brady
 - 2. Acceptable substitutes: Dymo, Belden or submitted and Approved equal

2.2 GENERAL REQUIREMENTS

- A. All telecommunication components, areas, and cables shall be labeled, including but not limited to:
 - 1. Fiber cables.
 - 2. Metallic cable.
 - 3. Ground points.
 - 4. Cross-connect fields.
 - 5. Exterior enclosures.
 - 6. Conduit ends (pathways).
 - 7. Pull boxes and junction boxes.
 - 8. Equipment racks and cabinets.
 - 9. Fiber patch panels
 - 10. Maintenance holes.
 - 11. Cables in maintenance holes and pull boxes.
 - 12. Patch cables/jumpers.
- B. Pathways are defined but not limited to; any conduit, innerduct, underground duct bank, wiring troughs, pull boxes, and any wiring systems used to enclose cabling of any type.
- C. All label material shall be suitable for intended usage and environment, meeting the legibility, defacement and general exposure requirements listed in UL 969 for indoor and outdoor use.

IDENTIFICATION FOR TELECOMMUNICATIONS SYSTEMS

Where insert labels are used, the insert label shall be covered with clear cover and securely held in place.

- D. Interior labeling: printer shall be of the thermal transfer type capable of printing self-laminating labels of various size up to and including 1.5" by 1.5" printable area with a 4.5" self-laminating tail. No non-self-laminating labels shall be approved.
- E. All labels shall be permanent, i.e. will not fade, peel, or deteriorate due to environment or time.
- F. Handwritten labels are not acceptable.

2.3 CONDUITS AND PATHWAYS

- A. Conduits: General-purpose label designed for powdered coated surfaces with an ultraaggressive adhesive, trade name, "Mondo Bondo" (Brady). Label size shall be appropriate for the conduit size. Font size shall be easily visible from the finished floor.
- B. Innerduct: Polyethylene general-purpose tagging material
 - 1. Brady part number PTL-12- 109 (.75 X 3.00) used with an R4310 ribbon. This tag shall be attached using tie wraps.
- C. Junction boxes (larger than four-inch x four-inch): General-purpose label designed for powdered coated surfaces with an ultra-aggressive adhesive, trade name, "Mondo Bondo", Brady part number PTL-43-483 (1.90 X continuous) used with an R6010 ribbon. Font size shall be easily visible from the finished floor.
- D. Junction boxes (four-inch x four-inch): General-purpose label designed for powdered coated surfaces with an ultra-aggressive adhesive, trade name, "Mondo Bondo"
 - 1. Brady part number PTL-42-483 (1.00 X continuous) used with an R6010 ribbon.

2.4 BACKBONE AND HORIZONTAL CABLE AND TERMINATIONS

- A. Fiber termination hardware (cover): General purpose label designed for powdered coated surfaces, trade name, "Mondo Bondo"
 - 1. Brady part number PTL-42-483 (1.00 X continuous) used with an R6010 ribbon.
- B. Fiber termination hardware (designation strip): Thermal transfer printable label with a permanent acrylic adhesive
 - 1. Brady part number PTL-10-423 (.75 X .25) used with an R6010 ribbon.
- C. Patch panels: Gloss white film with a permanent acrylic based adhesive
 - 1. Brady part number PTL-39-422 (.375 X .60) used with an R6010 ribbon.
- D. Inside and outside plant fiber cables: Permanent acrylic adhesive, self-laminating vinyl wire and cable identification
 - 1. Brady part number PTL-33-427 (1.50 X 4.00 X 1.00) used with an R4310 ribbon.

IDENTIFICATION FOR TELECOMMUNICATIONS SYSTEMS

2.5 EQUIPMENT RACKS AND CABINETS

- A. General purpose label designed for powdered coated surfaces.
- B. Basis of Design: Trade name, "Mondo Bondo",
 - 1. Brady part number PTL-42-483 (1.00 X continuous) used with an R6010 ribbon.

PART 3 - EXECUTION

3.1 GENERAL

A. Labeling format shall be as shown in Telecommunications Drawings Set.

3.2 CONDUITS AND JUNCTION/PULL BOXES

- A. All conduits, innerduct, junction boxes, gutters and pull boxes shall be labeled.
- B. Conduits shall be labeled with the word "communications" and the conduit's origination room number and destination room number. Permanent room identifiers shall be used.
- C. Label conduit every 50 feet, at each wall and floor penetration and at each conduit termination, such as outlet boxes, pull boxes, and junction boxes, or as otherwise specified in other Sections.
- D. Junction boxes, gutters and pull boxes shall be labeled with identification name or number as determined by Contractor and submitted for approval.
- E. Labels on conduits, junction boxes, gutters and pull boxes shall be machine-generated and easily visible from the finished floor.

3.3 FIBER TERMINATIONS

- A. Label cable terminations on designation strips.
- B. Label all cable at each terminating point.
- C. Labels shall be self-adhesive and machine generated.
- D. Handwritten labels are not acceptable
- E. Cable identification numbers shall not be duplicated.
- F. Three copies of a cable record document containing the cable information required on the cable label shall be delivered to the GOAA Telecommunications Department.

3.4 EQUIPMENT RACKS AND CABINETS

- A. All racks and cabinets shall be properly labeled with permanent typewritten labels, easily visible from finished floor.
- B. Label as indicated in Drawings.

3.5 CLEANING

A. Remove all unnecessary tools and equipment, unused materials, packing materials, and debris from each area where Work has been completed unless designated for storage.

3.6 ACCEPTANCE

- A. Once all work has been completed and the Owner is satisfied that all work has been completed in accordance with contract documents, the Owner will notify Contractor in writing of formal acceptance of the system.
- B. Acceptance shall be subject to completion of all work and submittal and approval of full documentation as described above.

END OF SECTION 270553

SECTION 270813 - TESTING COPPER CABLES

PART 1 - GENERAL

Work of this Section is part of Filed Sub-Bid Section 260000

1.1 DESCRIPTION

- A. The work covered by this section of the Specifications includes all labor necessary to perform and complete such construction, all materials and equipment incorporated or to be incorporated in such construction and all services, facilities, tools and equipment necessary or used to perform and complete such construction. The work of this section shall include, but is not limited to, the following:
 - 1. Cable testing for copper cables.
 - 2. Providing testing results in accordance with the strictest manufacturer written recommendations.

1.2 QUALITY ASSURANCE

A. Refer to Section 27 00 00 for general details.

1.3 CODES, STANDARDS AND GUIDELINES

A. Except as modified by governing codes and by the Contract Documents, comply with the applicable provisions and recommendations in Section 27 00 00.

1.4 SUBMITTALS

- A. Refer to Section 27 00 00 for general details.
- B. Submit Manufacturer's Cut Sheets for the following:
 - 1. Any products not specifically listed in the PRODUCTS section shall require a submittal of the manufacturer's cut sheets.
- C. List of test equipment to be used.
- D. Sample of test data to be provided to the campus representative at the completion of testing.
- E. Identity and qualifications of Contractor's personnel who will perform the testing.
- F. Submit the proposed schedule for performing testing at least 2 weeks prior to the start of testing.

1.5 IDENTIFICATION

A. Refer to Section 27 05 53 for general details.

1.6 WARRANTY

A. Refer to Section 27 00 00 for general details.

PART 2 - PRODUCTS

2.1 CATEGORY 5E UTP CABLE TESTER

- A. Testing for all cables 25 pair or larger are to use a tester that tests 25 pair at a time.
- B. The field tester must meet the requirements of ANSI/TIA/EIA-568.
- C. Make and model at Contractor's discretion.

2.2 CATEGORY 6A UTP CABLE TESTER

- A. The field tester must be a Level IV or greater.
- B. The field tester must meet the requirements of ANSI/TIA/EIA-568-B.2, Addendum 1
- C. Tester must output test results with Fluke's LinkWare reporting software.
- D. Make and model at Contractor's discretion.

2.3 MULTIMETER

A. Make and model at Contractor's discretion.

PART 3 - EXECUTION

3.1 GENERAL

- A. The Contractor shall test, as described below, all metallic cables installed under these specifications.
- B. Visually inspect all cables, cable reels, and shipping cartons to detect cable damage incurred during shipping and transport. Return visibly damaged items to the manufacturer.
- C. Where post-manufacturer test data has been provided by the manufacturer on the reel or shipping carton: submit copies to the campus representative prior to installing cables.
- D. Test fully completed systems only. Piecemeal testing is not acceptable.
- E. Testing shall not be performed until after all hardware is installed and attached, and all labeling and identification has been completed.
- F. Any cable that does not pass all required testing shall be removed, replaced, and retested.
- G. Remove and replace any defective cables from pathways system. Do not abandon cables in place.
- H. The telecommunications representative reserves the right to observe all portions of the testing process.

- I. The telecommunications representative further reserves the right to conduct "Proof of performance testing", using Contractor equipment and labor, a random re-test of up to ten percent (10%) of the cable plant to confirm documented test results.
- J. Perform all tests as required by the manufacturer in support of the structured cabling system warranty.

3.2 GROUNDING & BONDING

A. All grounding and bonding is to be complete before any system testing is to be attempted.

3.3 TESTING

- A. All test results are to be defined as acceptable / unacceptable by the requirements of ANSI/TIA/EIA-568 B.2.
- B. Copper Cables General Requirements
 - 1. After terminating and splicing the cables. Test all cable pairs for:
 - a. Continuity to the remote end.
 - b. Shorts between any 2 or more conductors or ground
 - c. Transposed pairs
 - d. Reversed Pairs
 - e. Split Pairs
 - f. Crossed Pairs
 - g. Wire map.
 - h. Length.
 - i. Shield Continuity (If Shielded)
 - j. Continuity to Grounding (If Shielded)
 - 2. Using a multimeter, test continuity to ground (TGB or TMGB) for a maximum resistance of 1Ω , see section 27-05-26 for additional detail.
- C. Indoor Riser or OSP Copper Cable
 - 1. After terminating and splicing the cables. Test all cable pairs for:
 - a. DC Loop Resistance for any 2 conductors in the cable
- D. Category 6 Copper Station Cables:
 - 1. Contractor is to perform a three connector permanent link test.
 - 2. After terminating both ends of all 4-pair cables, but before any cross-connects are installed, test these cables for the following:
 - a. Return Loss
 - b. Insertion Loss
 - c. Attenuation
 - d. NEXT (near-end crosstalk)

- e. PSNEXT (power sum near-end crosstalk)
- f. FEXT (far end crosstalk)
- g. ACR-F (attenuation to crosstalk ratio)
- h. PSACR-F (power sum attenuation to crosstalk ratio)
- i. Propagation delay
- j. Delay skew

3.4 ACCEPTANCE

- A. All test results for Cat 3 cable are to be documented and submitted in Microsoft Excel or .csv format to the campus telecommunications representative within five (5) working days of test completion.
- B. All test results for Cat 6 cable are to be documented and submitted in Fluke LinkWare format to the campus telecommunications representative within five (5) working days of test completion.
- C. Test result shall be recorded per cable and identical copies placed on three removable media devices (CD or DVD) for delivery to the campus project manager and campus telecommunications representative.
- D. Each test report shall contain the following general information:
 - 1. Date of Preparation
 - 2. Date of Test
 - 3. Project Name
 - 4. Contractor's Name
 - 5. Media Type
 - 6. Make, Model and Serial Number of test equipment used
 - 7. Date of Last Calibration
 - 8. Names of Test Crew.
- E. In addition to the results of the specific tests specified, reports shall also include:
 - 1. Cable Number
 - 2. Cable Type
 - 3. Pair or Conductor Count
 - 4. Individual Pair or Conductor Numbers,
 - 5. Results of Each Test for Each Pair or Conductor
 - 6. Total Number of Serviceable Pairs or Conductors in Cable.
 - 7. Ground Resistance Measurements

F. Once the testing has been completed and the telecommunications representative is satisfied that all work is in accordance with the Contract Documents, the representative will notify the Contractor and/or project manager in writing or via email.

END OF SECTION 280813

SECTION 27 08 23 ROGERS FREE LIBRARY

SECTION 270823 - TESTING OF FIBER OPTIC CABLES

PART 1 - GENERAL

Work of this Section is part of Filed Sub-Bid Section 260000

1.01 DESCRIPTION

- A. The work covered by this section of the Specifications includes all labor necessary to perform and complete such construction, all materials and equipment incorporated or to be incorporated in such construction and all services, facilities, tools and equipment necessary or used to perform and complete such construction. The work of this section shall include, but is not limited to, the following:
 - 1. Cable testing for fiber optic cables.
 - Providing testing results in accordance with the strictest manufacturer written recommendations.

1.02 QUALITY ASSURANCE

A. Refer to Section 27 00 00 for general details.

1.03 CODES, STANDARDS AND GUIDELINES

A. Except as modified by governing codes and by the Contract Documents, comply with the applicable provisions and recommendations in Section 17010

1.04 SUBMITTALS

- A. Refer to Section 27 00 00 for general details.
- B. Shop Drawings:
 - None Required
- C. Submit Manufacturer's Cut Sheets for the following:
 - Any products not specifically listed in the PRODUCTS section shall require a submittal of the manufacturer's cut sheets.
- D. List of test equipment to be used.
- E. Sample of test data to be provided to the campus representative at the completion of testing.
- D. Identity and qualifications of Contractor's personnel who will perform the testing.
- E. Submit the proposed schedule for performing testing at least 2 weeks prior to the start of testing.

1.05 IDENTIFICATION

A. Refer to Section 27 05 53 for general details.

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1.06 DEFINITIONS

A. N/A

1.07 WARRANTY

A. Refer to Section 27 00 00 for general details.

PART 2 - PRODUCTS

2.01 OPTICAL TIME DOMAIN REFLECTOMETER (OTDR)

- A. The field tester must meet the requirements of tests specified in ANSI/TIA/EIA-455, inclusive of all subsections.
- B. Make and model at Contractor's discretion.

2.02 OPTICAL POWER MEASUREMENT EQUIPMENT

- A. Fluke Networks
 - SimpliFiber
 - 2. OMNIScanner w/ Fiber Test Adapters
- B. Other Pre-Approved Power Meter

2.03 OPTICAL FIBER INSPECTION SCOPE

- A. Fluke Networks
 - 1. Fiber Inspector Pro
- B. Other Pre-Approved Inspection Scope

PART 3 - EXECUTION

3.01 GENERAL

- A. The Contractor shall test, as described below, all fiber optic cables installed under these specifications.
- B. Visually inspect all cables, cable reels, and shipping cartons to detect cable damage incurred during shipping and transport. Return visibly damaged items to the manufacturer.
- C. Where post-manufacturer test data has been provided by the manufacturer on the reel or shipping carton: submit copies to the campus representative prior to installing cables.
- D. Test fully completed systems only. Piecemeal testing is not acceptable.

- E. Testing shall not be performed until after all hardware is installed and attached, and all labeling and identification has been completed.
- F. Any cable that does not pass all required testing shall be removed, replaced, and retested.
- G. Remove and replace any defective cables from pathways system. Do not abandon cables in place.
- H. The campus telecommunications representative reserves the right to observe all portions of the testing process.
- I. The campus telecommunications representative further reserves the right to conduct "Proof of performance testing", using Contractor equipment and labor, a random re-test of up to ten percent (10%) of the cable plant to confirm documented test results.
- J. Perform all tests as required by the manufacturer in support of the structured cabling system warranty.

3.02 TESTING

- A. All test results are to be defined as acceptable / unacceptable by the requirements of ANSI/TIA/EIA-526, inclusive of all subsections.
- B. Fiber Optic Cables General Requirements
 - 1. Index matching fluids or gels shall not be used.
 - Strands whose measured attenuation fall outside the acceptable range shall be subject to further inspection and testing to determine the nature of the fault. Faults related to connectorization shall be corrected, and the fiber re-tested as described above, until acceptable attenuation measurements are recorded. If acceptable attenuation cannot be achieved, than the fiber shall be replaced in its entirety.
- C. Optical Time Domain Reflectometer Testing
 - 1. All OTDR testing procedures and field test instruments shall comply with applicable requirements of: EIA/TIA 455-78 and EIA/TIA 455-133
 - OTDR test jumpers must meet the criteria for reference jumpers specified in EIA/TIA-455-171.
 - 3. A launch cable shall be installed between the OTDR and the first link connection.
 - 4. A receive cable shall be installed after the last link connection.
 - 5. All cables shall be OTDR tested at 1310 nm and 1550 nm (for Single-mode) operating wavelengths for anomalies and to ensure uniformity of cable attenuation and connector insertion loss.
 - 6. All cables shall be OTDR tested at 850 nm and 1300 nm (for Multi-mode) operating wavelengths for anomalies and to ensure uniformity of cable attenuation and connector insertion loss.

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- 7. All fiber links shall be tested in both directions.
- 8. Optical Return Loss (ORL) for each link shall be measured.
- 9. Fiber Length shall be measured and documented.
- 10. Perform a high resolution OTDR test with tracing printouts noting each optical fiber and buffer tube color designation.

D. Optical Power Loss Testing

- 1. All fiber optic cables are to be tested via the One-Jumper Reference Method, formerly Method B.
- Perform end-to-end, bi-directional attenuation (loss) test for each fiber strand at 850nm and 1300nm (multi-mode) or at 1310 and 1550 (single mode) wavelengths.

E. Other Tests

1. After installation of connectors, visually inspect each fiber end-face at 200x magnification for multi mode fiber and 400x magnification for single mode fiber. Refinish fibers with visible defects and/or striations in the core area.

3.03 ACCEPTANCE

- A. All test results and corrective procedures are to be documented and submitted in Microsoft Excel or CSV format to the campus telecommunications representative within five (5) working days of test completion.
- B. Each test report shall contain the following general information:
 - 1. Date of Preparation
 - 2. Date of Test
 - Project Name
 - 4. Contractor's Name
 - Media Type
 - 6. Make, Model and Serial Number of test equipment used
 - 7. Date of Last Calibration
 - 8. Names of Test Crew.
- C. Submit the following information regarding the optical fiber cable testing:
 - 1. Cable Number
 - 2. Fiber Count

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- 3. Individual Fiber Numbers
- 4. Connector Types
- 5. Number of Connectors / Patches
- 6. Calculated Maximum Link Loss
- 7. Length of Run
- 8. Results of Each Test for Each Fiber
- 9. Measured Link Loss for Each Fiber.
- D. Test result shall be recorded per cable and identical copies placed on three removable media devices (CD or DVD) for delivery to the campus project manager and campus telecommunications representative.
- E. Once the testing has been completed and the campus telecommunications representative is satisfied that all work is in accordance with the Contract Documents, the representative will notify the Contractor and/or campus project manager in writing or via email.

END OF SECTION 280823

SECTION 271600 - COMMUNICATIONS CONNECTING CORDS, DEVICES AND ADAPTERS

PART - GENERAL

PART 2 - PRODUCTS

2.1 APPROVALS AND SUBSTITUTIONS

- A. All products shall be provided as specified, without exception, unless approved in writing prior to the bid. All products shall be "NEW".
- B. Non-compliant products installed as a part of this Contract shall be removed and replaced and all costs for removal and replacement shall be borne solely by the Cable Contractor(s).

2.2 PATCH CORDS/JUMPERS

- A. Category 6 unshielded twisted pair, Plenum rated
- B. Factory terminated double ended, 8-position to 8-position, modular, stranded conductors, Category 6 4 pair. As manufactured by:
 - 1. 1' Cat.6 Patch Cord for each cable installed
 - 2. 10' Cat.6 Patch Cord for each cable installed
 - 3. Or Approved Equal.
- C. Fiber optic jumpers.
 - 1. Factory terminated double ended, two strand cordage with LC connectors on each end, length defined as need by the network integrator. As manufactured by:
 - a. Ortronics OS2 LC to LC 3 Meters
 - b. Belden OS2 LC to LC Duplex 3 Meters
 - c. Or Approved Equal

PART 3 - EXECUTION

3.1 GENERAL

- A. Category 6 modular patch cords
- B. Factory terminated double ended, 8-position to 8-position, modular, stranded conductors, Category 6 4 pair.
- C. Ortronics One 7-foot long and one Category 6a patch cord as noted below be supplied for each work station (faceplate) installed as part of this project. Stations include:
 - 1. Voice and data stations
 - 2. Wireless access points
 - 3. CCTV camera locations (interior and exterior)
 - 4. A/V network stations

COMMUNICATIONS CONNECTING CORDS DEVICES AND ADAPTERS

- D. Contractor shall furnish and install Category 6 patch cords in the following quantities:
 - 1. 1' long 1 for each cable installed and terminated.
 - 2. 10' long 1 for each cable installed and terminated.
 - 3. Cable Contractor shall patch all terminated stations from patch panel to network switch in MDF. Coordinate with the Bristol IT.
- E. Cable Contractor shall FURNISH AND INSTALL the following fiber optic patch cords for EACH telecommunications room, MDF:
 - 1. 3 meter Duplex LC/LC OM4 50 micron Multimode fiber patch cords
 - 2. Field terminated copper or fiber patch cords and jumpers shall not be allowed.
 - 3. All work shall be performed in a professional manner.
- F. Cable ties and other cable management clamps shall be no more than hand tightened and shall fit snugly, but not compress, crimp, or otherwise change the physical characteristics of the cable jacket or distort the placement of twisted-pair components. Replace any cable exhibiting stresses due to over tightening of cable management devices.
- G. Where possible, route cables in overhead cable trays and inside wire management systems attached to the equipment cabinets and racks. Use plastic ties or ducts to restrain cabling installed outside of wire management systems on racks or in cabinets.
- H. Cables shall not be attached to ceiling grid or lighting fixture wires. Where support for horizontal cable is required, the Cable Contractor shall install appropriate carriers to support the cabling.
- I. Any cable damaged or exceeding recommended installation parameters during installation shall be replaced by the Cable Contractor prior to final acceptance at no cost to the Owner.

3.2 LABELING

- A. All patch cords are to be uniquely labeled at each end at approximately 2 inches from the termination point.
- B. Note all labeling information on the as-built drawings.

END OF SECTION 271600

SECTION 280000

SECURITY

PART 1 - GENERAL

1.1 GENERAL

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 GENERAL REQUIREMENTS, which are hereby made a part of this Section.
- B. The card access and video surveillance systems have been designated as a "Proprietary Product" to match and integrate with the existing Bristol RI Genetec access control and video surveillance systems.

1.2 REFERENCE TO GENERAL CONDITIONS

- A. The General Conditions shall be considered as forming an integral part of the specifications and shall be carefully examined before bid for any work submitted.
- B. Definitions: In addition to the definitions outlined in the General Conditions, the following definitions shall apply to this Section of the Work:
 - Security System: The Security System shall consist of card access system, Video Management System (VMS), Intrusion Detection System (IDS) Access Control, and Equipment Racks, all applicable wire and cable, and the functional integration of all subsystems through subsystem interfaces as specified herein.

1.3 SUMMARY

A. Scope of Work

- 1. The Card access system basis of design is Genetec Synergis ACS and will connect to the existing Genetec system at the town hall.
- 2. The security contractor shall provide the LIBCAL visitor management system locks on doors 15, 16, 17, 10 and 18 as indicated on the drawings. The lock shall be Schlage Encore Lever Smart Lock. The locks shall be programmed into the existing LIBCAL visitor management and scheduling system. Coordinate with the Library Manager the inclusion of the locks into the system. The Library Manager shall provide the system administration credentials and licensing for the locks.
- 3. The Video management system basis of design is Genetec Omnicast and will connect to the existing video management system at the town hall.
- 4. The Intrusion detection system shall be Bosch B6512K-c intrusion panel. This panel is for the glass breaks and panic buttons and will be set to 24 hour alarm to the local police.
- 5. The Security contractor shall provide a fully integrated Security System and applicable wire and cable for this project.

- 6. The electrical contractor shall provide all back boxes, conduit, 120VAC power, and fire alarm relays as indicated on the security drawings.
- 7. The security contractor shall provide all category cabling and fiber for all related IP security devices and switching that is related to the security system.
- 8. The Security contractor shall provide coordination with security door hardware. Coordinate door hardware with the Architect and the hardware engineer. Refer to Division 8 for additional scope of work.
- 9. The Security contractor shall be responsible for providing complete, and working systems.
- All penetrations shall contain UL listed fire stopping as required by code which shall be installed by the security contractor or general contractor/construction manager.
- 11. All door hardware is by the division 8 contractor.
- 12. All device cabling shall be routed to the termination points as shown on the security riser system drawing and part plans on where the security data gathering panels, transformers, and Power Supplies, etc. located therein. The Contractor shall provide copper cabling from the data gathering panels to the doors, cameras within 295' shall be category 6 4 pair UTP cable and Game Changer 4 pair extended ethernet cabling for network devices more than 295 feet from the MDF.
- 13. Related Work: The following items are not included in this Section and will be performed under the designated Sections. Security contractor to coordinate with the following. Refer to each trade construction documents for additional scope of work:
 - a. Division 27 Sections TELECOMMUNICATIONS
 - b. Division 8 OPENINGS
 - c. Division 11 Sections VEHCLE AND PEDESTRIAN EQUIPMENT
 - d. Division 25 INTEGRATED AUTOMATION
 - e. Division 26 -ELECTRICAL
- B. REFERENCES: The security system shall be installed in accordance with all applicable national, state and local codes including but not limited to the most recent editions of the following:
 - National Fire Protection Association, 2015 (NFPA 70)
 - National Fire Protection Association Life Safety Code, 2015 (NFPA 101)
 - 3. Building Officials & Code Administrators International, Inc. (BOCA) National Building Code
 - 4. Americans with Disabilities Act (ADA)
 - 5. Underwriters Laboratories (UL) Applicable Standards for Safety

- 6. Underwriters Laboratories (UL) Applicable Standards for Proprietary Security Systems
- 7. Uniform Building Code, 2015 (UBC)
- 8. Open network video interface forum (ONVIF) standards and compliance
- 9. International Building Code (IBC), 2015
- 10. ANSI/BICSI 005-2016 Electronic Safety and Security Design and Implementation

1.4 SUBMITTALS

- A. General Description and Requirements
 - 1. Submit Submittals in accordance with the construction schedule.
 - 2. shall consist of Product Part Submittals Data Sheets with Numbers Highlighted, Shop Drawings which shall include Symbols Lists, Floor Plans, Security Room Part Plans, Wall Field Elevations, Equipment Rack elevations, Component Installation Details, and Detail Riser diagrams for each system, Samples as requested, all Required State Licenses for both the contracting corporation, and their employees, Manufacturer's Certifications (2 minimum) and a detailed completion schedule. Partial submittals will not be accepted.
 - 3. No portion of the Work shall commence nor shall any equipment be procured until the Pre-fabrication Submittals have been approved.
 - Submittals shall be accompanied by a letter of transmittal identifying the name of the Project, Contractor's name, date submitted for review, and a list of items transmitted.

B. Samples

1. The Contractor shall submit samples of any equipment components upon request of the Architect.

C. Record Documentation

- Prior to any final acceptance testing, submit one set of preliminary (draft) record drawings to the Architect. The preliminary record drawings are to be used by the Engineer to conduct the system final test.
- 2. Upon final acceptance of the work, the Contractor shall submit 3 Hard copies, and 1 soft copy of the record documentation within 30 days from the date of final acceptance to the Architect/Owner.

- Record documentation shall include all information required in the submittals but revised to reflect as installed conditions. Record documentation shall include the following:
 - Operation and maintenance manuals for all devices, equipment and software modules.
 - b. Floor plan drawings indicating device locations with device legends indicating manufacturers and model numbers for each device.
 - Floor plan drawings indicating conduit and wire routing and junction box locations. Wire routing shall include cable identification and terminal strip numbers.
 - d. Mounting details for all equipment and hardware.
 - e. Functional block diagrams for each system.
 - f. Wiring details showing rack elevations, equipment wiring, terminations and inter-rack wiring.
 - g. Wiring diagrams for all custom circuitry.
 - h. Wiring diagrams for each Data Gathering Panel.
 - i. Point to point wiring diagrams.
 - j. Layout details for each riser location, including security panels, power supplies, junction boxes, conduit and any other security-related equipment located in the riser.
- 4. All record documents shall be supplied in both hard copy and in an electronic format as required by the Project at time of submittal.
- 5. Operation and Maintenance (O&M) Manuals
 - a. Operation and Maintenance Manuals shall include, as a minimum, the following:
 - 1) Operational description of each subsystem.
 - 2) Detailed programming descriptions for each subsystem, including step-by-step procedures with illustrations identifying how computer screens will appear after each entry.
 - 3) Explanations of subsystem interrelationships. Explanations shall include operations of each subsystem and operations unique to the interfaces between each of the subsystems and possible conflicts that may occur with the interfaces. Each explanation shall be identified, tagged, bound and indexed into a single binder.
 - 4) Electrical schematics for each piece of equipment specified.
 - 5) Power-up and power-down procedures for each subsystem.

- 6) Description of all diagnostic procedures.
- 7) A menu tree for each subsystem. The tree shall provide a graphical flow of commands within the menu system.
- 8) Setup procedures for each component of the subsystems.
- 9) A list of manufacturers, their local representatives and Integrators that have performed Work on the Project. The list shall include contact names, phone numbers and addresses for each.
- 10) Installation and service manuals for each piece of equipment.
- 11) Maintenance schedules for all installed components. Schedules shall include inspections and preventative maintenance schedules, and documentation of all repaired or replaced equipment.
- b. Operation and Maintenance Manuals shall include a separate section for each software program incorporated into the Project. The software section shall include, at a minimum, the following information:
 - 1) Definitions of all software related terms and functions.
 - 2) Description of required sequences.
 - 3) Directory of all disk files.
 - 4) Description of all communications protocols, including data formats, command characters, and a sample of each type of data transfer.
 - 5) Instructions for manufacturer supplied report generation with illustrations showing what reports should look like and screen-by-screen illustrations for each entry made.
 - 6) Instructions for custom report generation.
 - 7) Database format and data entry requirements.
- c. As a minimum training sessions shall consist of the following:
 - 1) General project information and review shall be by the General Foreman or Superintendent of the Trade.
 - 2) Specific system training shall be by a Factory Trained Representative.
 - Provide a complete review of the project and systems including, but not limited to, the following:
 - a) Note equipment layouts, locations and control points.

- b) Review each system.
- c) Review system design operation and philosophy.
- d) Review areas served by equipment.
- e) Identify color codes used.
- f) Review features and special functions.
- g) Review maintenance requirements.
- h) Review operation and maintenance manuals.
- i) Respond to questions
- 4) After classroom training, walk the entire project, review each equipment room and typical locations. Explain equipment and proper operation.

1.5 QUALITY ASSURANCE

- A. Contractor Qualifications: The Bidder shall provide information in the proposal to demonstrate compliance with these requirements.
 - 1. Work specified herein shall be the responsibility of a single electronic security systems integration contractor.
 - The security contractor shall have local in-house engineering and project management capabilities consistent with the requirements of the Work. The Contractor shall provide a team supervised by a full-time on-site foreman who is to be present at all times that Work is actively in progress. The Contractor shall provide a team managed by a full-time project manager who is to be present at all construction meetings and available to answer all questions by the Architect or the construction team.
 - 3. By submitting a Bid, the Contractor thereby certifies that it is qualified in all areas pertaining to, either directly or indirectly, the Work. In the event the Contractor becomes unable to complete the Work in accordance with the Contract Documents, or the satisfaction of the Owner or its representatives, due to a lack of understanding of equipment, systems or services required by the Contract Documents, it shall be the responsibility of the Contractor to retain the services of the applicable manufacturers' representatives to expeditiously complete the Work in accordance with the construction schedule at no additional cost.
 - 4. The Contractor shall maintain, or establish and maintain, a fully staffed local office including a service center capable of providing warranty and service to the Security System for the Project. The Contractor shall staff the service center with factory trained technicians and adequately equip the office to provide emergency service within 4 hours after being called, 24 hours per day, whether or not the Owner elects to purchase a maintenance contract from the Contractor.

- 5. The Contractor shall provide factory-certified technicians with the latest and most advanced training on the specified SMS/VMS/IDS software/hardware, workstations and data gathering panels. These certified employees shall provide the installation of, and commission of, the Work. All installing personnel shall also be licensed as required by local and/or state jurisdictions. The Contractor shall provide all licensing documentation as part of the submittal process.
- 6. The Contractor shall ensure compliance with, and have a thorough understanding of, all local codes and contract conditions pertaining to this Project.
- 7. The Security contractor shall maintain an inventory of spare parts in house and other items critical to system operation and as necessary to meet the emergency service requirements of this Project within the local service center. A current inventory list shall be provided for within the submittal. Spare parts shall include, but not be limited to, the following:
 - a. SMS
 - 1) Data Gathering Panel (including all boards)
 - 2) Door controllers
 - 3) Input/Output boards
 - 4) Elevator control input and output boards
 - 5) Card readers
 - 6) Door position switches
 - 7) Request-to-exit motion sensors
 - 8) Power supplies
 - b. VMS System
 - 1) Cameras
 - 2) Multi lens dome cameras
 - 3) Lenses
 - 4) NVR
 - 5) Network Switches
 - Power supplies
- B. Product Standards
 - All materials (except those existing materials or materials provided by other Sections and specified for incorporation in the completed work) included in the completed security system installation shall be new, not refurbished and shall fully comply with the latest published specifications of the manufacturer.

- 2. Unless otherwise specified, all components included in the completed security system shall be standard, unmodified production models.
- 3. Equipment that is installed, maintained, serviced, programmed, etc. by a single representative due to proprietary equipment and/or manufacturer region exclusive agreements shall not be acceptable. All equipment proposed by the Contractor shall be available to at least, three dealer/installer representatives, minimum, within a 50 mile radius of the Project site.
- 4. All equipment, components and materials provided by the Contractor shall, in every respect, meet or exceed the performance characteristics and technical specifications for referenced components.
- 5. It shall be the responsibility of the Contractor to provide complete and detailed technical information for all equipment, components and materials. In the event that submitted technical information is not sufficient to permit the Engineer to readily confirm that proposed equipment, components and materials will meet or exceed the performance and technical specifications, the proposed equipment, components or materials shall be rejected. The Engineer shall determine the final decision as to whether proposed equipment, components and materials are acceptable. In no case shall acceptance by the Owner of proposed equipment, components and materials relieve the Contractor of his responsibility to produce completed systems, which comply with these specifications.
- 6. Within the technical specifications for the system, certain manufacturers may be specified. These manufacturers are listed for example purposes only.
- 7. Provide at the time of installation the latest version of all equipment and software.
- 8. The systems (including software, hardware and firmware) proposed for this project shall have been installed in at least five projects of similar size and nature and shall have been in beneficial use for at least six months prior to submission of the bid proposal. Provide a compliance statement from each manufacturer along with references.
- 9. All exterior devices shall be sealed and protected against all weather conditions including heat, cold, moisture, dust, and sand.
- 10. As Part of the Submittal process, the Security Contractor shall provide unit pricing for all components, hourly labor rate for all parties involved in the project (foreman, installer, PM), and installation costs for each component. Assume a 300ft run for each. Installation cost shall be broken out by materials and labor.

1.6 WARRANTY

A. Provide a two-year warranty on the Work. If, within the two years after the date of final acceptance of the Work or within such longer period of time as may be prescribed by law, or by the terms of any applicable special warranty required by the Contract Documents or provided by a manufacturer, any of the Work or equipment is found to be defective or not in accordance with the Contract Documents, the Contractor shall correct it promptly including all parts and labor after receipt of notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such non-conforming

- condition. This obligation shall survive termination of the Contract. The Owner will give such notice promptly after discovery of the condition.
- B. Nothing contained in the Contract Documents shall be construed to establish a shorter period of limitation with respect to any other obligation that the Contractor might have under the Law, the Contract Documents, or any manufacturer's warranty. The establishment of the time period of one

C.

- 1. During the Warranty period, the Contractor shall, upon receipt of a request for service form the Owner, deploy service personnel to the Owner's premises within four hours (After hours time included) to initiate corrective action.
- 2. All Warranty service and repair work shall be performed by personnel who have been trained, certified and are experienced in the operation and maintenance of the installed system(s).
 - a. Warranty service shall include the replacement of all parts and/or components as required to restore normal system operation. In the event that system parts or components must be removed for repair, it shall be the responsibility of the Contractor to furnish and install temporary parts and/or components as required to restore normal system operation until the repaired parts or components can be repaired and re-installed.
 - b. It shall be the responsibility of the Contractor to maintain an inventory of spare parts or to arrange for manufacturer parts support as required to ensure correction of all critical component failures or malfunctions within 48 hours of the Owner's request for service. Critical parts shall be defined as those, which govern or affect the normal operation of more than one field device.
 - c. The Contractor's Warranty obligation shall include correction of any software/firmware defects, which may be identified during the Warranty period. Any failure of the software/firmware to perform as specified by the software/firmware manufacturer at the time of final acceptance shall be defined as a software/firmware error.
 - d. In the event that the Contractor determines and demonstrates to the Owner's sole satisfaction that service or repairs are required as a result of misuse, abuse or abnormal wear and tear, the Contractor shall be compensated for such service or repairs as agreed upon by the Contractor and Owner. Similarly, such compensation to the Contractor shall apply in the event that repairs are required for devices and equipment not provided by the Contractor but incorporated in the completed systems.
 - e. Immediately following the completion of a Warranty repair or service call, the Contractor's service personnel shall submit a written report to the Owner which details the service work performed, the cause of the trouble, and any outstanding work which is required to restore complete and normal operation.

- D. Perform preventative maintenance during the warranty period. Submit a list of items to be included in the preventative maintenance program in the submittal process. The list shall include maintenance to each item, the frequency of such maintenance, and the amount of time to be spent on each item for maintenance. Preventative maintenance shall include, but not be limited to, the following.
 - 1. Annual Preventative Maintenance: Test and adjust system sensors.
 - 2. Semi-Annual Preventive Maintenance
 - a. Inspect and clean all Data Gathering Panels.
 - b. Inspect, test, and clean power supplies. Replace batteries as necessary.
 - c. Inspect, clean and vacuum all equipment racks.
 - d. Test and adjust all Cameras pan, tilt, zoom, and preset functions. Inspect, and adjust VMS Workstation views and test all network video servers/recorders.
 - 3. Quarterly Preventive Maintenance
 - a. Inspect and clean the printers, and system workstations. Perform hardware, firmware, software, and disk drive maintenance as required to ensure optimum performance.
 - b. Run SMS system diagnostics and perform file maintenance to insure optimal performance.
 - c. Clean all camera housing view panels.
 - Visually observe all camera and monitor displays and adjust as needed for optimal performance.
 - e. Provide Security System Software updates as required.
- E. Include a manufacturer's software support agreement as part of the Warranty. This agreement shall include all software updates, revisions, telephone service assistance and training for any changes in operation.
- F. Provide written notice to the Owner documenting any work performed during the warranty period, including any preventative maintenance work performed.
- G. Provide loaner equipment for any equipment not field repairable. Such loaner equipment shall be in working order and the functional and technical equivalent of the item replaced.
- H. Provide loaner equipment that is fully compatible and fully functions with all associated equipment.
- Loaner equipment for system components (example: badge printer, cameras, network video servers etc.) that must be shipped from the manufacture or distributor shall be on site and operational within 48 hours of the component failure. Furnish lists of equipment that will require shipment from the manufacturer or distributor and lead times associated with that equipment.

- J. Repair or Replacement Service
 - 1. Repair or replacement service during the warranty period shall be performed in accordance with the following:
 - a. Major system components including, but not limited to, the SMS system workstations, data gathering panels (Data Gathering Panels, Network Video Recorders): 7 days, 24 hour, 2 hour response time.
 - b. All other components and devices: 7 days, 24 hour, 4 hour response time.
- K. If the Contractor is unable to restore system operation during the warranty period within one business day of a system failure, the Owner reserves the right to require the Contractor to provide on-site manufacturer's service technicians at no additional cost.
- L. The Owner reserves the right to expand or add to the system during the warranty period using firm(s) other than the Contractor for such expansion without affecting the Contractor's responsibilities, provided that the expansion is done by a firm which is an authorized dealer or agent for the equipment or system being expanded.
- M. Provide on-line software maintenance and support during the warranty period including all software and hardware updates for all provided equipment. It is up to the contractor to inform the building management about all updates during the warranty period.

PART 2 - PRODUCTS

A. SECURITY MONITORING SYSTEM (SMS)

A. System Architecture

General

a. The Rogers Free Library access control will connect to the existing access control system at the town hall over the town WAN. Provide door controllers in the Rogers Free Library and connect to the existing system. Coordinate all programming of the existing system with the town's IT department.

2. Power Supplies

- a. Provide power supplies for all SMS equipment, Data Gathering Panels, as specified herein.
- b. Provide independent, fused outputs for each device connected to the power supply.
- c. For Locks, provide a multi-output access power controller with independent fused relay outputs and Fire Relay interface.
- d. All power supplies to contain two 12AH batteries for backup.
- e. Monitor power fail alarms for each location within the SMS.

- f. All 12/24VDC Power Supplies must be UL listed.
- g. All 120VAC for 12/24DVC power supplies must be wired directly in the enclosure in order to maintain UL listing. Refer to manufacturer's quidelines.
- h. Refer to Division 8 construction documents for lock power requirements.
- i. Acceptable Manufacturers:
 - 1) Altronix
 - Or approved equal
- 3. Magnetic contact (door position switches):
 - a. Provide Double Pull Double Throw position switch to monitor the open/closed status of doors as indicated on the Security Device Drawings.
 - b. Magnetic contact (door position switches): Provide normally closed door position switches to monitor the open/closed status of doors and for camera callup whether the callup is for a door held open, door forced or the camera activation when a door is closed and the contact is made.
 - c. Acceptable Manufacturers:
 - 1) Interlogix 1076
 - 2) Or approved equal
- 4. Tamper Switches
 - a. Provide normally closed tamper switches to monitor the secure status of all Security and power related enclosures
 - b. Include the number of tamper switches in the total alarm input figures.
 - c. Acceptable Manufacturers:
 - 1) Interlogix 3012-N
 - 2) Or approved Equal
- 5. Fire Alarm System
 - a. Electrical Contractor to Monitor normally closed fire alarm contacts from the Fire Alarm System.
 - b. Electrical Contractor to provide all required fire alarm relays at each Security head end location and as required by the division 8 construction documents and security drawings.
 - c. Security Contractor to Interface with a normally closed contact from the Fire Alarm Relay to the door power supply. This is to provide for automatic unlocking of fail-safe locks during a fire alarm.

- d. Security Contractor to provide UL Listed Fire Alarm interface at each lock power location.
- e. Security Contractor to provide all cable and connections as required to interface the terminals with the SMS and fail-safe locks. The Fire Alarm System Contractor will provide cable and connections as required from the interface terminal cabinet to the Fire Alarm System.
- f. Acceptable Manufacturers:
 - 1) Genetec

6. Database Partitioning

- a. The upgraded SMS software database shall provide for database partitioning by password to allow segregation of various areas of the facility and other facilities. Coordinate with the Owner to determine the initial partitioning requirements.
- b. Partitioning shall permit access to the database information by the Owner only based on password level and/or classification.
- c. Configure the SMS software such that the Owner may or may not, at the Owner's discretion, view all or some portions of the partitioned database based on password level and/or classification.
- d. Partitioning of the card holder database shall restrict access to card programming functions for groups of cards.
- e. Partitioning of the card reader and control output point databases shall restrict access to card programming functions for groups of cards, card readers and control output points.
- f. Operators with partitioned access shall only be able to view and/or edit information (databases, card reader controlled doors, maps, alarm inputs, control point outputs, etc.) for sections of the database that their password gives them privileges.
- g. Operators with partitioned access shall only be able to receive and/or respond to alarms for sections of the database that their password gives them privileges.
- SMS software shall not allow an operator to grant access to doors or assign access privileges to card holders for doors that are not included in the respective operator's partitioned database privileges.

7. Data Gathering Panel

a. The Data Gathering Panel shall provide the following:

- 1) An IP based intelligent interface between card reader controllers and the file server utilizing distributed processing technology.
- 2) Simultaneous support of a minimum of two access card facility codes and bit-formats. The Data Gathering Panel shall grant access through card reader controlled devices based on cardholder access level, access card facility code, and access card number.
- 3) Supervised alarm inputs to monitor the status of alarm circuits and report the status information to the SMS file server. Supervision of all wiring between the Data Gathering Panel and the monitored alarm devices shall meet UL 1076 guidelines for 4-state supervision.
- 4) Control relay outputs for controlling devices by remote command from the system workstation, through time programming or on alarm point activation. Outputs shall be rated for a minimum of 2A at 24VDC.
- 5) Supervision and monitoring of all wiring between the Data Gathering Panel and the monitored alarm devices for secure, alarm, and fault conditions. Supervision shall meet UL 1076 guidelines.
- 6) Adequate EPROM to maintain a minimum card database of 20,000 expandable to 250,000 cards including access levels and time zones.
- 7) Capable to maintaining a minimum of 65,000 tractions within the controllers EPROM
- 8) Ethernet communications between Data Gathering Panels and the file server.
- 9) Automatic disconnection from the communication loop upon a communication failure within the Data Gathering Panel to prevent communication to other Data Gathering Panels in the loop from being interrupted.
- 10) Intrusion alarm indication on the system workstation if a card reader controlled door is opened without an authorized card use or request to exit signal.
- 11) A door prop alarm indication on the system workstation if the card reader controlled door is propped open past an adjustable time period after an authorized card use or request to exit. The door prop time delay shall be adjustable from the system workstation from one to 60 seconds on a per reader basis.
- 12) Each Data Gathering Panel shall include one spare card reader input point and 20 percent spare alarm input points and output points after all specified points are initially connected.

- A locking steel enclosure designed for surface mounting. Provide a tamper switch to sense the removal or opening of the enclosure cover. Provide any conduit required from the Data Gathering Panel to power supplies, junction boxed or wireways. All Data Gathering Panels shall be keyed alike and shall be on the same key as all security system power supplies and power distribution cabinets.
- b. Upon loss of communication with the file server, the Data Gathering Panel shall contain enough RAM to operate normally. In addition, the Data Gathering Panel shall store up to 10,000 card transactions and up to 16 events per potential alarm input, and transmit that data to the file server as soon as communication is restored.
- c. Upon verification of card authorization or request to exit the Data Gathering Panel shall activate a door control relay output and shunt the intrusion alarm. The lock control output contacts shall be rated for 2 A @ 24 VDC. Relay activation time shall be adjustable from the system workstation from one to 30 seconds on a per reader basis. The door shall automatically relock upon closure.
- d. Transaction time for authorized cards shall be less than 0.5 seconds from the time of card read until the door is unlocked.
- e. All alarm and control points as well as card reader inputs, shall be capable of independent time programming via software controls from the system file server.
- 8. Data Gathering Panel Power Supply
 - a. The Data Gathering Panel power supply shall be dedicated to Data Gathering Panels and shall not provide power for locks or any other low voltage device.

| b. | Minimum | Specifications |
|----|---------------------|-----------------------|
| Ο. | IVIII III I I GII I | Opcomodiono |

| 1) | Type | UL Listed Class II power limited |
|----|-----------------|--|
| 2) | Input | 120 VAC hard wired |
| 3) | Output | Regulated and filtered DC |
| 4) | Alarm outputs | Individual low battery and power fail |
| 5) | Battery backup | Four hours of rechargeable backup for the connected load |
| 6) | Battery support | Battery charger to maintain battery |
| 7) | Battery | Sealed gel type |
| 8) | Enclosure | Key lockable wall mount housing with tamper switch |

- c. The Data Gathering Panel Power Supply shall be housed in a locking steel enclosure designed for surface mounting. The housing shall include a tamper switch to sense the removal or opening of the enclosure cover. All Data Gathering Panel power supplies shall be keyed alike and shall be on the same key as all security system Data Gathering Panels, power supplies and power distribution cabinets.
- d. Acceptable Manufacturers: As per the SMS manufacturer's recommendations and/or specifications.

9. Tamper Switch

a. Minimum Specifications:

| 1) | Туре | Plunger |
|----|---------------|--|
| 2) | Configuration | Normally closed when the cabinet door is closed |
| 3) | Mounting | Fastened within cabinet with no access to fasteners when cabinet is closed |

10. Card Reader

- a. Provide contactless/proximity card readers as indicated on the Security Device Drawings.
- b. Provide manufacturer recommended power supplies as required. The power supplies shall be UL Class II, power limited and shall provide necessary output voltage to allow the card readers to operate at maximum specified read range.
- c. All card readers shall meet the following requirements:
 - The card reader shall read encoded data from access cards (125kHZ proximity,13.56MHz with Bluetooth low energy) and transmit the data to the Data Gathering Panel. The operating frequency shall meet all local regulations.
 - A two-color LED and an audible tone shall indicate authorized and unauthorized reader uses. Operation of LEDs, and audible tones shall be consistent throughout.
 - The card reader shall be capable of mounting directly to a metal surface.
 - 4) Reader shall be rated for outdoor use.
 - 5) The card reader and bit pattern shall not be proprietary to a single contractor or SMS manufacturer.
 - 6) Card reader must be Bluetooth enabled.
 - 7) Acceptable Manufacturers:
 - a) HID Signo (models 20 & 40)
 - b) Or approved equal

11. Request-To-Exit Motion Sensor. Provide request-to-exit motion sensors as indicated on the security drawings.

| a. | Minimum | Specifications: |
|----|---------|-----------------|
|----|---------|-----------------|

| 1) | Detection technology | Passive Infrared |
|----|----------------------|---|
| 2) | Detection pattern | Adjustable to provide coverage of immediate door area. |
| 3) | Output contact | Normally open contact that closes momentarily (one second or less) when sensor is activated |
| 4) | Power requirements | 12-24 VDC |
| 5) | Mounting | Surface mount to wall or ceiling or integral to the latching hardware. |

- b. Provide a manufacturer recommended power supply. The power supply shall be UL Class II, power limited.
- 12. Concealed Magnetic Contact (Door Position Switch). Provide concealed magnetic contact switches as indicated on the security device drawings.
 - a. Minimum Specifications:

| 1) | Gap | 1/2 inch between the magnet and switch |
|----|---------------|---|
| 2) | Configuration | DPDT Contact, White in Color. |
| 3) | Security | Biased |
| 4) | Mounting | As recommended by the door position switch manufacturer |

B. INTRUSION DETECTION SYSTEM

A. BASE PANEL

1. The security control panel shall have a base capacity of 16 fully supervised and programmable zones with integral power supply and supervised battery charger, auxiliary power for powering security detection devices, program switched auxiliary power supply for 4-wire smoke detectors, integral supervised digital alarm communicator, two general purpose program controllable outputs which can be programmed as general-purpose outputs or as Addressable loops and a supervised bell/siren output. One 12Amp hour battery is required for backup power for each panel.

B. PANEL ZONE EXPANSION

1. The panel shall be expandable to a maximum of 128 zones by adding standard hardwired 8 and/or 16 zone modules connected to the base panel via a supervised four-wire power/communication bus, by adding up to 112 addressable detection devices to one or both addressable loops on the base panel or by adding 64 zone 433 MHz. Narrow Band wireless receivers (to expand coverage area, up to 8 receivers shall be supported) to the four-wire communication bus. The system shall be capable of expansion using hardwired, addressable and wireless simultaneously in any mix that suits the application. The system shall support hardwired seismic sensors and programmable scheduled testing of these seismic sensors.

C. SYSTEM KEYPADS

The system shall accommodate up to 16 LCD keypads which are powered from the base panel via the four-wire communications bus. LCD keypads shall have a display capacity of at least 32 alphanumeric characters with the display having brightness and contrast control. Control keys shall be backlit for low light level ease of use. The keypads shall include individual "Armed", "Ready" and "Trouble" indicators and five programmable 'function' buttons and three keypad activated alarm buttons. Keypads shall have the capability to operate in a power-save mode in the event of a power failure.

D. ALTERNATE REPORTING METHODS

1. The system shall be capable of reporting all alarms, trouble and system status information over various combinations of the single integral digital alarm communicator, the dual digital alarm communicators, a cellular transmitter, an internet (IP) communicator and over a dedicated line DVAC channel.

E. CENTRAL STATION REPORTING

- 1. The system shall provide high speed 20 bps 1400/2300 Hz. handshake, contact ID and SIA reporting formats and shall be capable of being programmed to call up to 3 telephone numbers. The system shall also allow communication to a pager. The telephone numbers shall be programmable for 'backup' dialing should the primary number fail. The system shall be programmable for split reporting such that alarms/restorals, openings/closing and miscellaneous events can be sent to different telephone numbers or communication paths.
- 2. The system shall report an account code for each partition and a separate account code for non-partition (system) events.
- 3. The system shall provide opening/closing scheduled suppression to prevent opens and closes from being reported to the central station.

F. HARD COPY PRINTOUT

 The system shall be capable of including a serial output for a hard copy printer. All system events, alarms and restorals shall be printed and each event shall include the date and time.

G. OUTPUT RELAYS

1. The system shall be capable of including up to 64 fully programmable output relays with each relay having form 'C' contacts rated 2 Amps at 30 VDC. Relays shall be added in increments of four and may be located anywhere on the communication bus. Relay modules shall include an integral power supply, supervised battery charger and supply up to 1.0 Amp of auxiliary power at 12 VDC.

H. LOW POWER OUTPUTS

1. The system shall be capable of including up to 144 low power outputs with each output able to source 50 mA at 12 VDC. Outputs shall be added in increments of 16 and may be added anywhere on the communications bus.

I. REMOTE ANNUNCIATION

- 1. The system shall be capable of remote zone alarm and system status annunciation, up to 144 points, by adding 32 and/or 64 point annunciators anywhere on the 4-wire communications bus. Annunciators shall be capable of being flush mounted. The annunciators shall provide bull's eye and graphic annunciation capability.
- 2. The dual access control module shall accept a variety of proximity readers, magnetic stripe readers and any 26-bit Wiegand reader and readers shall be capable of being located up to 500 feet from the module. The dual module shall have inputs for two 'request-to-exit' detectors, two 'postpone arm' pushbuttons, two 'arm' pushbuttons, two 'door' contacts and two outputs for door strikes.
- 3. Access control software shall be an integral component of the base panel software and shall provide the following functions: capacity for 1,500 cards and up to 64 access levels, 99 seven-day schedules with 4 intervals per schedule, holiday scheduling for a two-year period, individual door unlock schedules, a programmable option to require 2 cards to open a specific door, ability to unlock doors automatically on fire alarm and automatic daylight saving time adjust. Access control functions shall be fully programmable through any system keypad and either locally or remotely using any PC and the upload/download software.
- 4. All access control transactions shall be recorded in the systems 3,000 event buffer for viewing via the keypad, for printing on a local printer or viewing locally or remotely via the upload/download software.

J. VOICE ASSISTED STATUS AND CONTROL

1. The system shall be capable of adding a module to provide system status and control via any local or remote touch-tone telephone with the system providing system status information by voice. The system shall include a word library and allow custom words for zone labels.

K. AUTOMATION CONTROL

1. The system shall be capable of controlling by event and/or by schedule up to 32 control devices. The automation control module shall connect to the system via the 4-wire communications bus. The system shall include

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2. 16 schedules to control the automation devices. Automation shall be controllable via any keypad and local or remote touch-tone telephone.

L. SYSTEM SOFTWARE

1. The base panel shall come complete with all the software to implement every system feature and allow the addition of every expansion or functional module without changes or addition to the basic software.

M. SYSTEM PROGRAMMING

- 1. The system shall be fully programmable via the LCD keypads and shall also allow event buffer viewing via the keypads.
- Separate PC based Upload/Download software shall provide the ability to fully program the system and read all current system programming and the event buffer. The system shall provide a connector on the base panel to allow local upload/download operation and shall be capable of being remotely, over the telephone lines or internet (IP network), uploaded or downloaded. The system shall provide a separate telephone number that can be called for the remote upload/download operation. Remote upload/download access shall be controllable by the user to prevent unauthorized access.
- 3. All system programming shall be maintained in non-volatile memory such that program information is maintained even if all AC and battery power is removed.

N. USER CODES

The system shall provide for 1,500 user codes selectable as either 4 or 6 digits. For Access Control, user codes shall be assignable to 1 of 64 access levels. User codes shall assignable to one or multiple partitions. The system shall offer a programmable option to allow users to program their own access code. The system shall offer a programmable option to require 2 users to disarm certain partitions.

O. PARTITIONS

1. The system shall be programmable for up to 8 fully independent partitions each partition shall have its own account code. Keypads shall be assignable as 'partition' keypads or 'global' keypads. Each zone in the system shall be assignable to one or more partitions.

P. SCHEDULING

The system shall provide for 99 date schedules with 4 intervals per schedule, 4
holiday schedules with 2 years of scheduling capacity, 50 open/close
suppression schedules and 16 automation schedules. All schedules shall be
programmable via the LCD keypads and via downloading either locally or
remotely.

Q. GROUND FAULT DETECTION

1. For commercial fire installations, the system shall include an integral ground fault detector which shall detect a single ground fault on any extended conductor in the system.

R. SUPERVISION

1. Each zone in the system shall be supervised. General system supervision shall include; loss of AC for the base panel and any remote functional. Provide 4 state supervision for all intrusion devices. The panel with its own AC input, batteries for the base panel and all remote functional panels shall be supervised and short circuit protected, each addressable device and each wireless input device shall be supervised for it presence and the 4-wire communication bus shall be supervised for low voltage and the presence of each enrolled module and keypad. Digital alarm communicators shall be supervised for telephone line trouble and failure to communicate and the system shall report any cellular or IP network communication panel trouble.

S. FALSE ALARM PREVENTION

The system shall include the following false alarm prevention features: audible exit delay, arm/disarm bell squawk, audible exit fault, urgency on entry delay, no entry arming/disarming, swinger shutdown programmable by zone, transmission delay by zone, AC fail, TLM trouble and low battery trouble transmission delay, rotating keypress buffer, recent close code transmission, police code (cross zone) transmission, scheduled seismic sensor testing and opening after alarm transmission.

T. AUTOMATIC ARMING/DISARMING

1. The system shall allow for automatic arming and disarming partition(s) according to a programmable schedule. The system shall include a method to automatically arm a partition after it has been disarmed for a set period of time. The system shall include a programmable limitation for basic users which shall delay disarming a specific partition for a set period of time.

U. TEMPORARY ZONE DISABLING/BYPASSING

1. The system shall include the following temporary zone disabling/bypassing features: arm partition with zone violated and arm zone upon restore, manual zone bypass by user, temporary bypass of a programmable group of zones which shall re-activate zones after programmable time.

V. NETWORK COMMUNICATIONS

The system shall be capable of network (LAW/WAN) and Internet communications according to ULC Level5 and/or UL-AA (Highline Security) standards. The Network communicator shall utilize 128-bit AES encryption over 10/100 base-T networks and support static or dynamic IP addressing. The IP communicator shall be capable of sending alarm events to a primary and backup IP receiver address and up to two standard email addresses. The internet communicator shall perform full alarm reporting directly to the central monitoring station as well as performing full system configuration programming and viewing system status using remote upload/download software over encrypted

connection. For security purposes, the internet communicator shall be capable of end-to-end supervision and hardwire substitution detection.

W. DUAL TECHNOLOGY MOTION SENSORS

1. The dual technology sensor shall use both microwave and PIR as detection methods. Sensor shall have a detection range of a minimum of 40ft. Unit shall be either wall or ceiling mountable. Current draw shall be 17 milliamps at 12VDC. Unit shall be no large than 5in x 2.76in x 2in in size or in ceiling mounted no larger than 3.5in in diameter. Unit shall be wired with 4 state line supervision.

X. GLASS BREAK DETECTORS

1. Glass break sensor shall be an acoustic type sensor that had a minimum detection diameter of 50ft. The detector shall have pattern recognition technology that listens for actual patterns of glass breaking and eliminating the false alarms patterns. Alarm response must be a minimum of 4 seconds. The unit shall be a maximum of 4 inches in diameter or 4.6 inches x 2.75 inches x 1 inch. Current draw must not exceed 25 milliamps.

Y. Acceptable Manufacturers:

1. Bosch D9412GV3 with Conettix IP-based communication option

C. VIDEO MANAGEMENT SYSTEM (VMS)

- A. The cameras at the Rogers Free Library shall connect directly to the existing video management system at the town hall. Provide all necessary licensing for the new cameras and integration with the access control system.
 - 1) Security contractor to provide the adequate amount of storage for the total number of cameras based on 45 days retention, 12 frames per second, 2MP resolution, and 45% motion.
- B. Provide all necessary VMS software upgrades and licensing for integration with the security management system to meet the following:
- C. Function
 - 1. The Video Management shall be in High Definition (1080P) and be an all color, It shall be compatible with local video broadcast standards.
 - 2. The VMS System shall be IP based with and controllable through GUI and keyboard controllers.
 - 3. The VMS system shall be Open Network Video Interface Forum (ONVIF) compliant for integration with 3rd party manufacturer's devices and software configurations through API/SDK configurations and software interfaces.
 - 4. Provide complete ONVIF documentation that all devices within the VIDEO SURVEILLANCE system has been tested to comply with all ONVIF categories for 3rd party integration.
 - 5. All IP based security devices shall be compatible with the latest release of ONVIF.

- 6. The VMS shall provide the following:
 - a. On-screen alphanumeric identification (16-character minimum) of the displayed camera location, on each monitor. Such identification shall be consistent through all system elements. The position of the on-screen identification on each monitor shall be user selectable and coordinated with the Owner prior to programming.
 - b. Remote control of cameras with zoom lenses and pan/tilt drives. Receiver driver units shall be integrated into the camera dome enclosures. Remote control of the camera shall include pan, tilt, zoom, and focus and iris control. Remote control capabilities shall include automatic preset position control on alarm of pan, tilt and zoom cameras through the integrated keyboards and GUI.
 - c. Continuous color recording of all cameras within the system to allow a minimum of 64 cameras to be simultaneously recorded in high definition (1080P) onto a hard drive.
 - d. Programming of automatic camera call-up of any camera on any Workstation. Coordinate with the Owner to establish configuration guidelines and provide all initial programming.
 - e. Programming of any camera within the system to sequence on any monitor. Dwell times shall be individually programmable for each camera. Coordinate with the Owner for camera-to-monitor sequences.
 - f. Programming the alarm monitor(s) to be blank or display any video input signal when not in alarm condition. The VMS shall automatically display alarm related video on the alarm monitor(s) when an alarm occurs. Following the specified dwell time, the VMS System shall return to the display selected before the alarm condition was initiated.
 - g. Acceptable Manufacturers:
 - 1) Genetec Omnicast

7. Video Surveillance Cameras

- a. Fixed IP Cameras shall be ¼ inch Progressive scan RGB CMOS, 5MP WDR and be IR compatible.
- b. 360*/180* type cameras shall be 1/3" progressive scan RGB CMOS CCD, 20MP, with dewarping at the camera.
- c. Multi-focal cameras shall have 1/3" progressive scan with a total of 4 gimbals, totaling 12MP, WDR Day/Night, IP66 and IK-10 rated, interchangeable lenses and Remote Focus, and stitching of video.
- d. For IP devices over 300ft from the MDF an Ethernet extender may be used. It shall be able to extend an additional 300ft from the power source, and be capable to extend IP video and POE to 3000ft.

- e. Camera type, location, enclosure and mounting requirements shall be as indicated on the Security Device Drawings.
- f. Provide infrared modules at all the exterior cameras
- g. Exterior cameras shall be equipped with heaters, and blowers for year-round operation
- h. All Cameras shall be powered by PoE802.3af
 - Video surveillance cameras with pan, tilt and zoom capabilities shall be configured such that any and all future SMS alarm points or card reader controlled doors or emergency phones located within the available field of view are programmed as presets for automatic viewing and real time recording. Applicable alarms generated by the SMS shall cause the camera to pan around, tilt up or down as required, and zoom in on the alarm event. Verify all preset positioning with the Owner prior to system programming.

i. Lenses

- Provide lenses for the field of view intended as indicated on the Security Device Drawings. Field verify lens requirements to provide for the defined desired angle of view, and high quality, glare-free, clear pictures at the video monitors.
- 2) Varifocal lenses are acceptable.
- 3) All camera lenses shall incorporate auto iris control.
- j. Acceptable Manufacturers:
 - 1) Axis Fixed interior camera shall be P3267-LV
 - 2) Axis Fixed exterior cameras shall be P3267-LVE
 - 3) Axis 360* exterior cameras shall be P3738-PLE
- 8. Video Surveillance Camera Housings and Mounts
 - a. Provide video surveillance camera housings and mounts as indicated on the Security Device Drawings.
 - b. Wiring to all cameras shall pass from the back box through the mount and into the housing. Exposed wiring or liquid tight of any kind shall not be acceptable.
 - c. Provide sun shields/tinted bubble for camera housings in outdoor locations exposed directly to sunlight.
 - d. Provide weather and dust proof camera housings with thermostatically controlled heaters and blowers in outdoor locations.

e. Provide lightning protection for power, control, and network cables for all exterior cameras.

D. WIRE AND CABLE

A. Minimum Specifications:

- 1. All wire and cable shall be Underwriter's Laboratories (UL) approved for its intended application, shall meet all national, state and local code requirements for its application, and shall meet or exceed manufacturers' recommendations for the components connected.
- 2. Provide plenum-rated cable as required by code.
- 3. All wire and cable shall meet individual system or subsystem manufacturer specifications.
- 4. All insulated wire and cable shall conform to the minimum requirements of Insulated Cable Engineers Association (ICEA) Standards.
- 5. Wire and cable shall comply with the applicable requirements of the National Electrical Code (NEC), latest edition, in regards to cable construction and usage.
- The conductors of wires shall be copper, and have conductivity in accordance with the standardization rules of the Institute of Electrical and Electronics Engineers, Inc. (IEEE). The conductor and each strand shall be round and free of kinks and defects.
- 7. All cable carrying data or voice transmissions shall be shielded. All other cable shall be shielded where necessary to guarantee interference-free signals.
- 8. Insulation shall be rated for a minimum of 300 V.
- 9. Color coding shall be accomplished by using solidly colored insulation. Grounding conductors, where insulated, shall be colored solid green or identified with green color as required by the National Electric Code (NEC).
- 10. All category cabling shall be in strict accordance with the division 27 specification, and be provided for by the telecommunications contractor.
- 11. The structure cabling system for the integrated security system must be manufacturer certifiable.

B. Minimum Wire Types and Sizes

- 1. Low Voltage Power Cable: Wire size shall be a minimum of 18 AWG, twisted, stranded, insulated and jacketed.
- Control Point Cable (Non-Power): Wire size shall be a minimum of 20 AWG, twisted, stranded, insulated and jacketed.
- 3. Control Point Cable (Low Voltage Power): Wire size shall be a minimum of 18 AWG, stranded, insulated, and jacketed.

4. For all IP devices provide category 6 UTP plenum cable as detailed in the 27000 UTP specification.

PART 3 - EXECUTION

A. GENERAL

- A. The requirements of Part One and Part Two also apply to the execution of the work.
- B. When a Manufacturer, or authorized Representative accepts an order for material and equipment, they agree to adjust Submittals and production schedules as required to accommodate the project schedule. Schedules shall be included with Submittals indicating review times as specified herein and manufacturing and delivery times such that material and equipment will be manufactured and delivered to the site sufficiently ahead of schedule so as not to delay the completion of the work.
- C. Prior to bid, inspect the site, existing conditions, fully understand the Work required, and provide the Work according to Contract Documents and all existing site conditions. Confer with the Manufacturer's of existing systems to be retained, modified or extended. Include all required costs and components for a fully functional system performing as indicated herein and on the Drawings. No additional compensation will be granted because of existing conditions.
- D. Verify the exact location prior to bid of all items that may be indicated and determine exact location of all electrical items that are not indicated on the Drawings.
- E. Any work installed contrary to the Contract Documents or written directions from the Architect shall be subject to change as directed by the Architect and no extra compensation will be allowed for making these changes or any work of any other trade due to these changes.
- F. Upon completion of work, the security contractor shall submit a testing and commissioning report for engineer/architect/owner approval. This document shall be in a excel spreadsheet format.
- G. Upon approval from the engineer/architect/owner of the testing and commissioning report shall commence the warranty period.
- H. Equipment and systems shall not be installed without first coordinating the location and installation of equipment and systems with all other Trades.
- I. Any and all material installed or work performed in violation of above requirements shall be re-adjusted and corrected by the Installer without charge.
- J. Refer to all Drawings associated with the project, prior to the installation or roughing-in of outlets, conduit and equipment, to determine the exact location of all outlets.
- K. Assure that all equipment is accessible, such as junction boxes, pull boxes, controls and such other apparatus as may require maintenance and operation from time to time. Security contractor to coordinate with electrical provided construction access panels sized in order to provide adequate and required access for installation. Provide rated panel or door appropriate for the construction being installed into (fire, smoke and/or acoustical).

- L. After installation, equipment shall be protected to prevent damage during the construction period. Openings in conduits and boxes shall be closed to prevent the entrance of foreign materials.
- M. Home runs indicated are not to be combined or reduced without written consent from the engineer.
- N. All connections to equipment shall be made as required, and in accordance with the approved submittal, setting drawings, and manufacturer's guidelines.

O. Site Observation:

- 1. Site observation visits will be performed randomly during the project by the engineer. Reports will be generated noting observations. Deficiencies noted on the site visit reports shall be corrected. All work shall comply with the Contract Documents, applicable Codes, regulations and local Authorities whether or not a particular deficiency has been noted in a site visit report.
- 2. The general contractor or construction manager is responsible to notify the engineer ten working days prior to closing in work behind walls, raised access floors, ceilings, etc., so that installed work can be observed prior to being concealed.
- Work concealed prior to observation and correction of deficiencies shall be made accessible for review at the discretion of the engineer. Bear all costs for allowing work to be reviewed.
- 4. Areas shall stay accessible until deficiencies are corrected and accepted. Notify the Engineer when all deficiencies are corrected. Return reports with items indicated as corrected prior to re-observation by the engineer.

B. SITE INSPECTION

- A. Security contractor to continuously verify that the site conditions are in agreement with the Contract Documents and the design package. Submit a report to the Engineer documenting changes to the site or conditions that affect the performance of the system to be installed. For those changes or conditions, which affect system installation or performance, provide (with the report) specification sheets, or written functional requirements to support the findings, and a cost estimate to correct the deficiency. No deficiency shall be corrected without written permission from the Engineer.
- B. Specific mounting locations, exact wire and cable runs, and conduit routing have not been specified or delineated on the Security Device Drawings. Coordinate all aspects of the Work with the engineer/architect/construction manager.

C. INSTALLATION

A. Coordination

 Security contractor to coordinate with the GC/electrical contractor to ensure that adequate conduit is provided and that equipment backboxes are adequate for system installation.

- 2. Security contractor to coordinate with the Electrical contractor to ensure that adequate power has been provided and properly located for the security system equipment, and door hardware.
- 3. Security contractor to coordinate with the general contractor/construction manager to ensure that doors and doorframes are properly prepared for electric locking hardware and door position switches.
- 4. Security contractor to coordinate with the door hardware contractor to ensure that the appropriate architectural/security door hardware is installed.
- 5. Security contractor to coordinate locations of all devices with the general contractor/construction manager and architect prior to installation.
- 6. Security contractor to coordinate and verify the location of each piece of rackmounted equipment with the engineer and owner's IT.
- 7. Security contractor to coordinate custom SMS report requirements with the Owner. Submit report formats to the Owner for review and acceptance.
- 8. Security contractor to coordinate all access rights, time zones, lockdown, cardholder group and other SMS programming parameters with the owner.
- 9. Security contractor to coordinate all initial database partitioning and setup with the Owner prior to initial programming and card holder data entry.
- 10. Security contractor to coordinate final camera locations, desired views, and camera housing and mount requirements with the Owner prior to installation.
- 11. Security contractor to coordinate camera housing and mount finishes with the architect/owner prior to installation.
- 12. Security contractor to coordinate finishes and colors of all equipment with the architect/owner. Submit all finish and graphics for all equipment in public areas to the Engineer for approval prior to installation.
- 13. Security contractor to coordinate all requirement penetrations both interior and exterior with architect and construction manager.
- 14. Security contractor to coordinate all fire stopping with construction manager/architect as require by code.
- 15. Security contractor to coordinate with owner's IT for all network based requirements. This shall include but not be limited to IP address, DHCP server requirements, cyber security requirements, and network traffic management requirements.
- 16. Security contractor to coordinate all requirement of the turnstiles with the architect, engineer, and construction manager.
- 17. Installation methods must be in strict accordance with ANSI/BICSI 005-2016, owner's standards, and manufacturer's guidelines.
- 18. Mounting heights for all device must comply with ADA standards.

19. Security contractor shall be in compliance with the NEC, IBC, and other local codes that are required by the AHJ.

B. General

- 1. Security contractor to verify acceptance of each type of specified request-to-exit hardware for each application with local life safety code officials.
- Security contractor to verify fail-safe and fail-secure lock requirements with the architect and engineer.
- 3. Contractor or equipment manufacturer logos or names shall not be visible on equipment in public areas.
- 4. Security contractor to provide tamper proof fasteners for all equipment in public areas. Fastener finish shall match equipment finish.
- C. Conduit shall be used in all garage areas, and exposed areas. Contractor's conduit design layout shall be coordinated and approved by architect, engineer, and construction manager. All conduits shall have no more than a 40% fill at the end of the project.
- D. If approval by architect/engineer, hanger assemblies located the garage areas and areas exposed to the weather, including; anchors, clamps, threaded rod, nuts, washers and pipe hanger shall be provided with a factory applied hot dipped galvanized coating. Any components or assemblies that require field modification, cutting, welding, or removal of the applied hot dipped galvanized coating shall be repainted with the appropriate coating.
- E. Equipment: Installation requirements are as follows:
 - Data Gathering Panel Locations
 - a. Security contractor to provide the following:
 - 1) Configure security equipment as indicated in the Security Device Drawings.
 - 2) Wire all power supply power fail alarm contacts in each equipment room as a single alarm input to the SMS.
 - Wire each power supply low battery alarm contact as individual alarm inputs to the SMS.
 - 2. Data Gathering Panels
 - a. Security contractor to provide the following:
 - Configure the system such that devices can be connected to spare input points, output points and card reader inputs on the Data Gathering Panel without requiring reconfiguration of the SMS.
 - 2) Configure the Data Gathering Panel IP communication chains such that no more than 16 Doors (including all possible spare

card readers) shall be connected to each Data Gathering Panel IP chain. RS-232 and RS-485 chains without direct connection to an IP network is not permitted.

Card Readers

- a. Security contractor to provide the following:
 - Wire card reader LEDs to indicate valid and invalid card reads, and door locked and unlocked conditions. All card reader LED indicators shall operate identically.

4. Electric Locking Mechanisms

- a. Security contractor to provide the following:
 - Provide connection to electric locking mechanisms provided by the hardware contractor.
 - 2) Wire electric locking mechanism as indicated on the Security Device Drawings.
 - Wire fail-safe electric locking mechanisms in accordance with local codes.
 - 4) Wire fail-secure electric locking mechanisms and power supplies such that locks remain powered and operational during a fire alarm condition or building power failure.

5. Fire Alarm Interface

- a. Security contractor to provide the following:
 - 1) Connect (hard wire) fail-safe electric and time delay locking mechanisms to the building fire alarm system for fail-safe release upon any fire alarm.
 - 2) Interface with a single low voltage/low current normally closed dry contact from the fire alarm system provided by the fire alarm contractor in the Fire Command Center (FCC). The contact will open on any fire alarm condition.
 - Provide all additional UL listed fail-safe relays and power supplies necessary to interface to this contact and unlock all failsafe doors.
 - 4) Connect fail-safe relays and UL listed power supplies to standard building power. Connection of fail-safe devices to emergency or UPS power shall not be acceptable.
 - 5) Reference the Security Device Drawings for fire alarm interface requirements.
- 6. IP Cameras

- a. Security contractor to provide the following:
 - 1) Field verify the exact location and positioning of all cameras with the Owner prior to installation.
 - 2) Power all interior and exterior cameras from centrally located power supplies at each Data Gathering Panel location.
 - Field verify and confirm views with the Owner prior to final installation and adjust camera positions and lens sizes as required.
 - Coordinate all exterior camera mounting heights, and locations with architect/engineer.

F. System Programming and Data Entry

- 1. Security contractor to provide all initial system programming and setup of the SMS including, but not limited to the following:
 - a. Graphical maps and icons. Coordinate with the Engineer to obtain AutoCAD Owner/Architectural backgrounds for implementation as graphical maps. Import all AutoCAD background information provided by the Engineer and produce a complete set of graphical maps depicting all SMS points.
 - b. SMS card reader information. Coordinate all card reader values and text, including descriptors, alarm messages, Camera call up, map call up and identification with the Owner and Engineer.
 - c. Input and output points for the SMS. Coordinate all input and output priorities and text, including descriptors, alarm messages, camera call up, and map call up and identification with the Owner and Engineer.
 - d. Initial system Card Reader information. Coordinate all Card Reader values and text, including descriptors, alarm messages, camera call up, map call up and identification, with the Owner.
 - e. Input and output points for the SMS. Coordinate all point priority and point text, including descriptors, alarm messages, camera call up, map call up and identification, with the Owner.
 - f. Initial camera call up and alarm information for interface with Video Management System.
 - g. Initial camera call up and alarm information for interface with Intercom System. Coordinate all inputs and outputs for the intercom system with the SMS for seamless action through the master station.
- 2. Security contractor to provide all initial system programming and setup of the Video Management System including, but not limited to the following:

- a. Initial setup for the interface with the SMS. The interface shall provide for automatic video surveillance Camera selection upon alarms within the SMS as defined in the Specification. Coordinate automatic video surveillance Camera selection, real-time record initialization, and record status alarm annunciation requirements with the Owner prior to programming.
- b. On-screen alphanumeric identification of each VIDEO SURVEILLANCE Camera, on each Monitor. Coordinate descriptors with the Owner prior to programming.
- c. Automatic selection of a VIDEO SURVEILLANCE Camera adjacent to a Card Reader upon an invalid card use. Coordinate automatic camera selection requirements with the Owner prior to system programming.
- d. Programming triggers for the video surveillance analytical references.

D. WIRING TECHNIQUES

- A. Security contractor or construction manager to provide code compliant fire proofing techniques for all penetrations of fire rated partitions and slabs, where the penetrations are made by or used for installation of the Security System.
- B. Route all wire and cable as required to prevent interference and signal contamination of both security system cable and cable associated with other systems. Coordinate the routing of wire and cable requiring isolation from power, radio frequency (RF), telephone, etc. with the Owner.
- C. Separate 120 VAC and other line voltage cables from low voltage cables within enclosures.
- D. Wire nuts shall not be an acceptable means of connecting wire and cable. Use B-wire crimp connectors or equal.
- Splicing of cable is not acceptable. All cabling shall be home run back to its designated closet.
- F. Run all wire and cable continuous from device location to the final point of termination. No mid-run cable splices will be allowed unless approved by the Engineer.
- G. Securely fasten junction boxes to the building structure.
- H. Secure junction box covers with tamperproof screws
- I. Provide compression type fittings to secure cable at junction box openings.
- J. Make cable connection for device terminations in junction boxes with crimp type connectors. Connectors shall provide a hermetic seal and test probe access such that the circuit may be checked without breaking the connection.
- K. Ensure all that back boxes and junction boxes have the approved an UL listed cover.
- L. All RJ45 male connectors shall be UL listed.

M. All security cabling shall be done in strict accordance with ANSI/BICSI 005-2016, Electronic Safety, and Security System Design, and Implementation.

N. Component Connections

- Prepare wire ends for attachment to components in accordance with manufacturer recommendations.
- 2. Wherever possible, and unless otherwise recommended by the manufacturer, connect individual wire conductors with crimp type spade lugs.

O. Grounding

- 1. Establish an earth ground connection within each Data Gathering Panel location. The intent of the earth ground is to prevent ground loops within security system circuits, ensure proper communications between system components and devices, and isolate security equipment from building electrical system noise.
- 2. Connect all security equipment located at each Data Gathering Panel location to the earth ground connection at each location.
- 3. Under no conditions shall the AC neutral, either in a power panel or in receptacle outlets, be used for a reference ground.
- 4. Provide all necessary hardware and cable to properly ground security equipment.
- Ground all equipment according to the manufacturer recommendations for each piece of equipment. The Contractor shall be responsible for any damage to equipment or communications problems that may occur due to improper grounding.

P. Testing

 Test all cabling for continuity before connection to data gathering panels, cameras etc.

E. POWER REQUIREMENTS

- A. Emergency backup 120 VAC power will be dedicated for the Security System as indicated on the Electrical Device Drawings. Coordinate with the Engineer to establish locations of security dedicated 120 VAC circuits.
- B. Connect to the AC power and provide UL listed power supplies and transformers to distribute low voltage power to the system components as required.
- C. Provide hinged cover terminal cabinets with tamper switches that are lockable for all power supplies, transformers and power distribution terminal strips. Provide all conduit and wiring from the AC power facilities to the terminal cabinets.
- D. All power supplies are to be installed in accordance with manufacturer's guidelines in an effort to maintain its UL listing.
- E. Surge Protection

- 1. Provide protection against spikes, surges, noise, and other line problems for all system equipment and components.
- Protect all exterior and building-to-building video, control, power, signal cables and conductors against power surges. Video surge protectors shall not attenuate or reduce video and sync signals under normal conditions. Each surge protector shall be UL Listed.

F. LABELED DOORS AND FRAMES

- A. In no instance shall any UL labeled door or frame be drilled, cut, penetrated, or modified in any way.
- B. The Contractor shall be responsible for replacing any labeled door or frame that is modified without written approval from the Engineer.

G. LABELING

- A. Place wire identification numbers on each end of all conductors by using sleeve type, heat shrinkable markers. Wire markers shall be T&B Shrink-Kon Type HVM or equivalent. Install markers to be readable from left to right or top to bottom. Wire numbers shall be computer printed. Hand written labels shall not be acceptable.
- B. Mark all connectors with common designations for mating connectors. The connector designations shall be indicated on the record drawings.
- C. Permanently mark all terminals. Terminal and cable markings shall agree with markings shown on as-built drawing.
- Coil all spare conductors in the device backbox or panel wire way. Neatly bundle and tag conductors.
- E. All labeling shall be done in strict accordance with ANSI/TIA-606-B standard for labeling.
 - a. Return competence evaluations for each trainee directly to the Owner.

F. Telephone Support

- 1. The SMS manufacturers shall establish direct telephone support for the Owner during normal business hours.
- 2. The Contractor shall provide on call service during the warranty period to answer any questions the Owner's representatives might have.
- 3. The contractor shall provide 5 days of in service support to the owner. The technician shall be required to be on site during normal working hours, 8 a.m. to 5 p.m. and be available for after hours call back for service related events.

H. SYSTEM START-UP

- A. The Security System shall be complete and ready to operate prior to the Consultant's final acceptance of the system.
- B. Load all of the initial user database as defined in this Section into all programmable systems up to the inaugural day of beneficial use of the system. The Owner will assist in establishing procedural guidelines and in defining terminology and conditions unique to the Owner's operation.
- C. Label all controls as necessary to agree with their function.

I. SYSTEM ACCEPTANCE

- A. Final acceptance testing of the Work will be conducted by the manufacturer's certified rep.
- B. Prior to any final acceptance testing, the Security Contractor shall submit two sets of preliminary (draft) Record Drawings to the Engineer. The preliminary Record Drawings are to be used by the Engineer to conduct the system final test.
- C. Submit a paragraph by paragraph completion matrix indicating completion or delinquency for each item included in the Specification and all subsequent addenda and bulletins as part of the Work. Indicate completion of the requirement by the word "Completed" following each paragraph number. Indicate delinquency for the requirement by the words "To Be Completed" following the applicable paragraph number. Should work on any item be under way, but not yet fully complete, indicate the extent (or lack thereof) of completion to date, and the proposed date of completion.
- D. Conduct a complete test of the entire Security System and provide the Engineer with a written report on the results of that test. During the course of this test, calibrate and test all equipment, place the integrated Security System in service, and test the integrated system.
- E. Following completion of the initial testing and correction of any noted deficiencies, conduct a five day burn-in test. The intent of such test shall be to prove the Security System by placing it in near real operating conditions. During this period the Security System shall be fully functional and programmed such that all points, interfaces, controls, reports, messages, prompts, etc. can be exercised and validated. Record and correct any system anomaly, deficiency, or failure noted during this period. Scheduling of the final acceptance test shall be based on a review of the results of this burn-in test.
- F. Deliver a report describing the results of functional tests, burn-in tests, diagnostics, calibrations, corrections, and repairs including written certification to the Engineer that the installed complete Security System has been calibrated, tested, and is fully functional as specified herein.
- G. Prior to the final acceptance test, coordinate with the Engineer for security related construction clean-up and patch work requirements. Security equipment closets and similar areas should be free of accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, remove all waste materials, rubbish, the Contractor's and its subcontractors' tools, construction equipment, machinery and all surplus materials.
- H. Upon written notification from the Contractor that the Security System is completely installed, integrated and operational, training of owner's staff, and the burn-in testing completed, the Engineer will conduct a final acceptance test of the entire system.

- I. During the course of the final acceptance test by the Engineer, the Contractor shall be responsible for demonstrating that, without exception, the completed and integrated system complies with the contract requirements. ALL PHYSICAL AND FUNCTIONAL REQUIREMENTS OF THE PROJECT SHALL BE DEMONSTRATED AND SHOWN. This demonstration will begin by comparing "as built" conditions of the Security System to requirements outlined in the Specification, item by item. Following the Specification compliance review, all Security System head-end equipment will be evaluated.
- J. In order to sufficiently demonstrate the Security System's functionality, the console operator on duty and his/her superior will be requested to perform certain daily operations inherent to the Security System. These operations may include, but not be limited to, manually locking and unlocking of doors within the SMS, verifying the status of current alarm/control points within the SMS, responding to alarms, adding/deleting personnel from the card holder database, camera call-up on various monitors, manipulation of PTZ cameras, changing setting on various pieces of equipment As all of these operations depend heavily on the training outlined within the Specification, the Contractor shall have completed all of the required training prior to initiation of the final acceptance test.
- K. Demonstrate the functionality of the various interfaces between systems. This will include, but not be limited to, correct camera call-up on certain alarms within the SMS, generation of alarms from related systems failure (e.g. video loss detection alarms loss of communications, etc.), fire alarm system fail safe lock release, and interface to any externally controlled devices and/or database system(s).
- L. Following the Security System equipment and workstation review, the installation of all field devices will be inspected. This field inspection will weigh heavily on the general neatness and quality of installations, complete functionality of each individual device, and mounting, backbox and conduit requirements compliance.
- M. All equipment shall be on and fully operational during any and all testing procedures. Provide all personnel, equipment, and supplies necessary to perform all site testing. Provide a minimum of two employees familiar with the system for the final acceptance test. One employee shall be responsible for monitoring and verifying alarms while the other will be required to demonstrate the function of each device. Supply at least two two-way radios for use during the test. A manufacturer's representative may be present on site to answer any questions that may be beyond the technical capability of the Contractor's employees, if the Contractor so elects or by specific request of the Engineer or Owner, at no charge to the Engineer or Owner.
- N. Upon successful completion of the final acceptance test (or subsequent punch list retest) the Engineer will issue a letter of final acceptance.
- O. The Engineer retains the right to suspend and/or terminate testing at any time when the system fails to perform as specified. In the event that it becomes necessary to suspend the test, all of the Engineer's fees and expenses related to the suspended test will be deducted from the Contractor's retainage. Furthermore, in the event it becomes necessary to suspend the test, the Contractor shall work diligently to complete/repair all outstanding items to the condition specified in the Specification and as indicated on the Security Device Drawings. The Contractor shall supply the Engineer with a detailed completion schedule outlining phase by phase completion dates and a tentative date for a subsequent punch list retest. During the final acceptance test, no adjustments, repairs or modifications to the system will be conducted without the permission of the Engineer.

END OF SECTION