PROJECT MANUAL

INTERIOR ALTERATION AT THE FIRST FLOOR LINK BUILDING WEST TRENTON CAMPUS

FOR THE

NEW JERSEY MANUFACTURERS INSURANCE COMPANY
301 SULLIVAN WAY
WEST TRENTON, NEW JERSEY 08628

NJM PROJECT NUMBER WT.O.2020.001
Commission Number: 20C009

Date: October 2, 2020

SPIEZLE ARCHITECTURAL GROUP, INC.

PROJECT MANUAL

INTERIOR ALTERATIONS AT THE FIRST FLOOR LINK BUILDING WEST TRENTON CAMPUS

FOR THE

NEW JERSEY MANUFACTURERS INSURANCE COMPANY

WEST TRENTON CAMPUS
301 SULLIVAN WAY
WEST TRENTON, NEW JERSEY 08628

ARCHITECT:

SPIEZLE ARCHITECTURAL GROUP, INC. 1395 YARDVILLE-HAMILTON SQUARE ROAD SUITE 2A HAMILTON, NEW JERSEY 08691 TELEPHONE NUMBER: (609) 695-7400 FAX NUMBER: (609) 394-2274 NEW JERSEY LICENSED ARCHITECT 21AC00063000 21AI01294900 21AI01505400 21AI01439400 21AI01674400	SEAL & SIGNATURE

MECHANICAL ELECTRICAL AND PLUMBING ENGINEER:

JOHNSON & URBAN, LLC 295 HIGHWAY 34 COLTS NECK, NEW JERSEY 07722 TELEPHONE NUMBER: (732) 772-1500 FAX NUMBER: (732) 772-1515 NEW JERSEY PROFESSIONAL ENGINEER NJ PE# 24GE04074900	_____ SEAL & SIGNATURE

PROJECT MANUAL

INTERIOR ALTERATIONS AT THE
FIRST FLOOR LINK BUILDING

FOR THE

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301 SULLIVAN WAY
WEST TRENTON, NEW JERSEY 08628

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The Architect may furnish additional drawings as may be required for further explanation of details for work under this Contract, but these drawings will not include shop drawings. Shop Drawings shall be completed and submitted for Architect's review for compliance with the contract documents prior to the starting of work by the Contractor, as specified herein.

END OF SECTION 000115

NJM Insurance Group
NEW JERSEY MANUFACTURERS INSURANCE COMPANY
301 Sullivan Way, West Trenton, NJ 08628
609-883-1300 / www.NJM.com

REQUEST FOR BIDS

For

INTERIOR ALTERATIONS at FIRST FLOOR LINK BUILDING

NEW JERSEY MANUFACTURERS INSURANCE COMPANY
WEST TRENTON CAMPUS
301 SULLIVAN WAY
WEST TRENTON, NJ 08628

NJM PROJECT NUMBERS: WT.O.2020.001

ISSUED: OCTOBER 7, 2020

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EXHIBIT C – NJM CONTRACTOR INSURANCE REQUIREMENTS .....
ATTACHMENT D – NEW JERSEY BUSINESS REGISTRATION REQUIREMENTS .....

DEFINITION OF TERMS

DEFINITION OF TERMS

Owner	New Jersey Manufacturers Insurance Company 301 Sullivan Way West Trenton, New Jersey 08628
Architect	Spiezle Architectural Group, Inc. 1395 Yardville Hamilton Square Rd, Ste 2A Hamilton, NJ 08691 Phone: (866) 974-7666 www.spiezle.com
Contractor	Party to whom the contract is awarded acting directly or through authorized representatives or employees.
Drawings & Specifications	All drawings and specifications prepared by **Spiezle Architectural Group, Inc. and their Sub-Consultants** and as directed herein, shall govern in the execution of the work.

REQUEST FOR BIDS

REQUEST FOR BIDS

Notice is hereby given that you have been invited to provide a bid to the Department of Facilities Operations, New Jersey Manufacturers Insurance Company, 301 Sullivan Way, West Trenton, NJ 08628

FOR: PROJECTS # WT.O.2020.001
INTERIOR ALTERATIONS at FIRST LINK BUILDING
WEST TRENTON CAMPUS
301 Sullivan Way
West Trenton, New Jersey 08628
ON: October 30, 2020 @ 11:00 am

Sealed bids must be delivered to John Rzepka, Facilities Project Team Leader, Facilities and Operations Department, New Jersey Manufacturers Insurance Company, 301 Sullivan Way, West Trenton, New Jersey 08628 before 11:00 am on **Friday, October 30, 2020.** Bids received after this time will NOT be accepted.

The first floor space in the Link building at the New Jersey Manufacturers Insurance Group's West Trenton campus is partially unoccupied. This space shall be reconfigured to serve as new office space. The selected contractor will be responsible for demolition of the existing casework, partitions, floors, and ceilings at the first floor Link building and associated back of house spaces. Modifications and alterations to the existing Mechanical, Electrical, Plumbing, Fire Alarm, Fire Sprinkler, Information Technology and Security systems to accommodate the reconfigured space. The installation of new partitions, floors, ceilings and other elements as required to provide complete and functional office space meeting NJM requirements.

The work required shall include furnishing of all labor, material, tools and appliances necessary to complete the project in the highest quality, craftsman-like manner.

For your convenience the Architectural Drawings detailing the project work have been attached to this Request for Bids.

Bids must be prepared on the forms furnished with the bid package and must be submitted in a specially addressed sealed envelope. Bids must be plainly marked to indicate the name and address of the bidder. Bids may either be mailed or delivered in person. Bids can also be submitted electronically via email to jrzepka@njm.com. All bids will be held and opened at the appropriate date and time. Bids received after the time for opening bids will be returned unopened.

It is suggested that all prospective bidders attend a pre-bid meeting being held at the site on **Wednesday, October 14, 2020 at 10:00 AM, at New Jersey Manufacturers Insurance Company, 301 Sullivan Way, NJ 08628.**

New Jersey Manufacturers Insurance Company reserves the right to reject any or all bids for any cause whatsoever.

Thank you

INFORMATION FOR BIDDERS

Information for Bidders

1. Proposal Forms

The proposal forms are a complementary part of the Contract Documents and shall be used by the bidder in his submission. All blank spaces must be completed in ink or typewritten. All erasures or other physical changes in the bid shall be signed or initialed by the bidder. Any omission in the Proposal shall be just cause for rejection.

2. Submission of Bid

Bidders must use the proposal forms provided. The Proposal shall be enclosed in a sealed opaque envelope and the outside of the envelope shall bear the name and address of the bidder as well as designation of the project.

Bids will be received by the Owner at the time and place designated in the Request for Bids.

3. Unit Prices

In submitting bids, bidders must state the unit price for each item.

4. Alternates

Alternate Bids, if any, for the various portions of work shall be included in each bid for the work as stated in other Sections of the Specifications.

The Contractor is required to provide a price for all Alternate Bids, if any, called for on the Proposal Form. The Owner reserves the right to award a Contract based upon the possible inclusion of one or more such Alternate Bids. The amounts of the Alternate Bids shall include any and all modifications to related, adjacent or surrounding work made necessary by use of such Alternate Bids. The Alternate Bids must be stated as additions to or deductions from the Base Bid, unless otherwise noted.

5. Errors in Bid

In the event there is a discrepancy between prices written in numbers and prices written in words, the prices written in words shall govern.

6. Brand Name or Equivalent

Whenever the Owner requests a brand name for a particular item, it will consider a "brand name or equivalent." If a substitute product is bid upon, the determination of equality will be in the sole discretion of the Owner. If the bidder desires to bid an equivalent item, the bidder shall do the following:

A. The bidder shall type in a substitute item, including the brand name, model number or catalog number, and a full description of item on the "Material Substitution Form" provided. The "Material Substitution Form" shall then be submitted to the Architect and Owner prior to the deadline for bidder's questions for review.

B. Upon request by the Owner, bidders shall provide a sample of the substitute item by bringing the substitute item to the Department of Facilities and Operations. The sample item shall be provided before the time of the bid opening, and with a paper, brochure or illustrative literature outlining the brand/manufacturer name, model number and full description of them. Each sample shall be clearly marked with the bidder's name, the Owner's project number, project name and the name of the product being substituted.

C. In some cases, a sample of the substitute item may not be requested by the Owner. In such case, bidders shall provide a brochure, pamphlet, or illustrative literature that outlines the brand/manufacturer's name, model number and other information relating to the substitute item upon request by the Owner.

D. Failure to provide a sample item or literature about substitute items upon request by the Owner shall result in disqualification of that item from the bid.

Please note: Bidders are to only bid brand name or equivalent. The Owner will not accept multiple bids on individual items.

7. Non Collusion Affidavit

Bids must be accompanied by a Non-Collusion Affidavit attesting to, among other things, that the bidder has not, directly or indirectly, entered into an agreement, participated in any collusion or otherwise taken any action in restraint of free, competitive bidding in connection with the above named project. Included with this bid package is a Non-Collusion Affidavit form which must be completed and submitted with the bid.

8. Condition of Job Site

Each bidder shall make a careful investigation of the job site and inform himself fully of the conditions relating to the construction and labor under which the work will be performed. Failure to do so will not relieve the successful bidder of his obligation to perform the work as set forth in the Contract Documents.

Each bidder by submission of his bid represents that he has apprised himself of all conditions, and the kind, quality, and quantity of work to be performed.

9. Addenda and Interpretation

The Bidder shall carefully study the Bid Documents and compare them with each other, shall examine the Project site and local conditions and shall at once report to the Owner in writing any errors, inconsistencies and ambiguities discovered.

No oral interpretations will be made to any Bidder as to the meaning of the Bid Documents, drawings and specifications. Every request for such an interpretation shall be made in writing and addressed and forwarded to **John Rzepka, New Jersey Manufacturers Insurance Company, 301 Sullivan Way, West Trenton, New Jersey, Phone (609) 883-1300 x 7910** Requests for interpretation may also be made by email and submitted to Mr. Rzepka at jrzepka@njm.com. No inquiry received after **5:00 pm** on **Wednesday, October 21, 2020** will be given consideration.

Every interpretation made to a Bidder will be in the form of an Addendum or Bulletin, which, when issued, will be sent as promptly as is practicable to all persons to whom the drawings and specifications have been issued.

During the bidding period, the Owner may furnish Addenda or Bulletins for additions to or alterations of the drawings and specifications, which shall be included in the work covered by the Proposals. It shall be the responsibility of the Bidder to ascertain that it has received all Addenda and Bulletins issued, prior to submitting its bid.

All issued Addenda and Bulletins shall become part of the Contract Documents.

Revisions, Addenda or Bulletins to the request for bids or bid documents shall be issued to Invited Bidders no later than five (5) days, Saturdays, Sundays and holidays excepted, prior to the date for acceptance of bids.

10. Interpretation and Approval

Should any dispute arise respecting the true construction and meaning of the specifications or whether a product or item is equal to that as called for, the same shall be decided by the Owner in its sole discretion.

11. Rejection of Bids

The Owner reserves the right to reject any or all bids and to waive any informality if deemed in the best interests of the Owner.

12. Work Scheduling

Prior to beginning of construction, the Contractor is required to submit in writing work schedules, which shall have the approval of the Owner. The Contractor is also required to submit in writing prior to beginning of construction the methods of construction to be used in performance of this project.

This work schedule is to identify the proposed work hours and be coordinated with the required phasing and logistics plans.

13. The Bids

On a bid for any contract, the Owner reserves the right to determine who is the most qualified bidder based on experience, ability to perform the work, financial ability, and work previously performed by the bidder in the particular area for which he has bid. All bidders agree that the decision of the Owner shall be final and not appealable unless such decision is made in bad faith.

14. Compliance

The bidder shall be familiar with and comply with all applicable local, state and federal laws and regulations in the submission of its bid and, if the bidder is awarded the contract, in the performance of the contract.

15. Codes

The Contractor shall perform all work to meet the requirements of all codes having jurisdiction and meet the requirements of all manufacturers.

16. Exception to Notices, Instructions and Specifications

Any conditions, limitations, provisos, amendments or other changes attached or added by the bidder to any of the provisions of this bid package (including the Request for Bid, Information to Bidders and Bid Forms) shall result in rejection of the bid by the Owner.

Any changes made by the bidder to any documents or forms provided by the Owner, and/or required to be submitted by the bidder with its bid shall result in rejection of the bid by the Owner.

Any conditions, limitations, provisos, amendments or other language included in the bid which does not conform or is inconsistent with any of the provisions of the Request for Bid, Information for Bidders, and Bid Forms shall result in rejection of the bid by the Owner.

17. Insurance

Please refer to Exhibit C – Contractor Insurance Requirements, included in the Project Manual and Section 12 (d) of New Jersey Manufacturers Insurance Company Contractor Agreement for Project with Architect for project coverage requirements.

18. NJM Required Contractor Procedures

Please refer to Attachment B – Procedures for Service and Construction Contractors West Trenton, included in Proposal Forms.

All Contractors and Sub-Contractors are to follow all procedures as indicated.

19. Pre-Bid Conference

A pre-bid meeting will be held at the site on **Wednesday, October 14, 2020 at 10:00 AM, at New Jersey Manufacturers Insurance Company, 301 Sullivan Way, West Trenton, New Jersey 08628.** It is suggested that all prospective bidders attend.

20. Owner's Operations

The continuity of NJM's business operations is essential and all work must be planned and performed in a manner that creates the least amount of disruption possible.

Keep driveways and entrances serving the premises clear and available to the Owner, Owner's employees and emergency vehicles at all times.

Limit use of the premises to work in areas indicated. Confine operations to areas within Contract Limits indicated. Do not disturb portions of the site beyond areas in which work is indicated.

Repair damage caused by construction operations.

21. Contractor Work Access

It is anticipated that the Contractor will be provided access to the work site during normal working hours. Contractor work hours will be Monday thru Friday, from 6:00 am to 5:00 pm. Night work and Weekend work may be performed if approved in advance by the Owner.

22. Deliveries

A. All deliveries are to be coordinated with NJM's project manager a minimum of 24 hours in advance.

B. No deliveries shall be permitted between 7:00 am and 9:00 am or 3:00 pm and 6:00 pm, Monday through Friday.

23. Continuity of Utilities

It will be the Contractor's responsibility to maintain the continuity of all Utilities in the work areas.

No facilities outside of the project work area are to be impacted by modifications to building systems required by this project. Shutdowns, disconnects, and interruptions in service are to be coordinated with the Owner in advance and scheduled to be performed off hours.

24. Safety and Temporary Protection

The Contractor will be fully responsible for all project safety. This includes following all OSHA and NJM safety protocols, including the use of personal protective devices. The Contractor shall perform all work in accordance with applicable OSHA and NJM safety standards. The application of all adhesives, paints and coatings shall comply with OSHA and NJM safety standards along with the manufacturers written instructions. Safety Data Sheets for all materials to be used on site shall be provided as part of the product submittals prior to installation.

25. Security

The Contractor will be required to comply with NJM's security requirements. All Contractors, Contractor employees, Sub-Contractors, Sub-Contractor employees and other workers engaged by the Contractor shall sign in with NJM security on a daily basis. Temporary badges will be provided to all workers. Parking areas on site will be designated for Contractor use. Prior to the start of work the Contractor shall provide a list of 24 hour emergency contacts.

The Contractor will be responsible for the security of all Contractors' items.

26. Logistics

It will be the Contractor's responsibility to store all project related materials offsite until those items are installed.

27. Use of Building Utilities

A. Toilets: The Contractor will provide their own temporary toilet facilities while on site.

B. Water: The Contractor will be allowed to use the building's water supply for the project. The location of water access will be coordinated with the Contractor prior to the start of work.

C. Electricity: The Contractor will be allowed to use the building's electrical power for the project. The Contractor will be responsible for providing their own extension cords or other devices as required.

D. Cafeteria: Contractors, SubContractors, employees, etc., will be permitted to use the NJM cafeteria.

28. Duration

The project duration is expected to be **120** calendar days.

29. Record Documents

The Contractor is to provide at Project completion a full and complete set of Record Documents showing where the installation varies from what was shown on the originally issued Contract Documents. Mark record sets with red pencil and other colors as necessary to distinguish additional changes or different categories of work. Note change order numbers, construction change directives, RFI numbers and similar identification where applicable. Identify and date each Record Drawing with the date and "PROJECT RECORD DRAWING" in a prominent location.

SCOPE OF WORK

SCOPE OF WORK

NEW JERSEY MANUFACTURERS INSURANCE COMPANY

PROJECT # WT.O.2020.001
INTERIOR ALTERATIONS at FIRST FLOOR LINK BUILDING
301 Sullivan Way
West Trenton, New Jersey 08628

The work to be performed under this contract includes the following:

Base Bid – This project includes all work associated with completely renovating the work area as designated on the drawings. Work includes but is not limited to: removal of all existing demountable metal partitions, demolition of the existing ceiling, construction of new partitions, installation of new ceiling grid, tile and light fixtures, modifications to the existing mechanical, electrical and plumbing systems, installation of new floor and wall finishes, and all other work as specified.

Allowances – There are no allowances included in this project.

Alternates – There are no alternates included in this project.

Unit Prices – There are no unit prices included in this project.

Duration – Substantial completion is to be achieved within **120** days from the execution of the contract.

Other Work – There is no other work being performed as part of this project.

PROPOSAL FORMS

BID DOCUMENT SUBMISSION CHECKLIST

All forms/certifications indicated below must be completed in full and this checklist initialed by the prospective bidder indicating inclusion of completed form with the bid documents. Failure to include any of the following may be a basis for disqualification of the bid.

Initial

Bid Document Submission Checklist ..... _____

Form of Proposal..... _____

Attachment B – Procedures for Contractors (EXHIBIT B)..... _____

NJM's Confidentiality and Non-Disclosure Agreement (EXHIBIT A) ..... _____

Bidder's Affidavit ..... _____

Non-Collusion Affidavit ..... _____

Bidder's Safety Acknowledgement..... _____

Bidder's Qualification Form..... _____

Proof of Business Registration – **Required for Contractor and all Sub-Contractors**

Copy of W9 Forms including Taxpayer Identification Numbers ..... _____

Business Registration Certificates ..... _____

Contractor Information ..... _____

Acknowledgement of Receipt of Changes to Bid Documents ..... _____

Material Substitution Form ..... _____

Insurance Certificates/Endorsements

Required for Contractor and all Sub-Contractors..... _____

FORM OF PROPOSAL

NEW JERSEY MANUFACTURERS INSURANCE COMPANY

For: INTERIOR ALTERATIONS at FIRST FLOOR LINK BUILDING
301 Sullivan Way
West Trenton, New Jersey 08628

FROM: _____ (Name of Contractor)
_____ (Address)
_____ (City, State, Zip Code)
_____ (Telephone Number)
_____ (Email Address)

TO: New Jersey Manufacturer's Insurance Company

The undersigned hereby declares that the only person or persons interested in the Proposal as principal or principals, is or are named below, and that no other person has any interest in the Proposal. This Proposal is made without any connection to any other person or persons making a Proposal for the same purpose. The Proposal is in all respects fair and without collusion or fraud and that no officer or employee of the Owner is, shall be, or will become directly or indirectly, interested as a contracting party, partner, stockholder, surety or otherwise in the performance of the contract, or in the supplies, work, or business to which it relates.

In submitting this bid, it is understood that the bidder has agreed to accept all terms and conditions included as part of this bid package. These terms and conditions include but are not limited to: insurance requirements, the general conditions of the agreement, procedures for Contractors, confidentially and non-disclosure agreements.

In submitting this bid, it is understood that the right is reserved by the Owner to reject any and all bids, or to accept part of a bid and reject the remainder thereof, or to accept part from one bidder and remainder from another bidder or bidders.

It is understood that, no bidder shall modify, withdraw or cancel the bid or any part thereof for sixty (60) days after the time designated for the receipt of bids in the Request for Bids.

It is further declared that the site of the work and the Contract Documents have been examined and it is also agreed that the work will be carried out and completed, if this Proposal is accepted, as specified and the undersigned will provide all the Superintendents, Labor, Material, Tools and Equipment, and all else necessary therefore, and incidental thereto for the items in the Proposal, complete in place, at the following prices:

(All sums provided below are to include costs for labor, materials, equipment, tools, machinery, water, heat, utilities, transportation, taxes and other facilities and services necessary for the proper execution and completion of this work.)

(If the bidder intends to use a Sub-Contractor to perform any work element in whole or part, the bidder must list the name, address and phone number for the Sub-Contractor performing the work. As part of this bid package W9 forms, Business Registrations Certificates, Confidentiality and Non-Disclosure Agreement and Insurance Certificates must be provided for all Sub-Contractors.)

Base Bid Scope Item #1 – Demolition and removal of existing items
Performed by:_____

_____Dollars ($_____)

Base Bid Scope Item #2 – Construction of new partitions
Performed by:_____

_____Dollars ($_____)

Base Bid Scope Item #3 – Installation of new doors and windows
Performed by:_____

_____Dollars ($_____)

Base Bid Scope Item #4 – Installation of new ceiling grid and tile
Performed by:_____

_____Dollars ($_____)

Base Bid Scope Item #5 – Installation of new floor finishes and wall base
Performed by:_____

_____Dollars ($_____)

Base Bid Scope Item #6 – Wall preparation and Painting
Performed by:_____

_____Dollars ($_____)

Base Bid Scope Item #7 – Installation of new projection screen, window shades, privacy curtains and display boards
Performed by:_____

_____Dollars ($_____)

Base Bid Scope Item #8 – All Required Mechanical Work
Performed by:_____

_____Dollars ($_____)

Base Bid Scope Item #9 – All Required Electrical Work
Performed by:_____

_____Dollars ($_____)

Base Bid Scope Item #10 – All Required Plumbing Work
Performed by:_____

_____Dollars ($_____)

Base Bid Scope Item #11 – All Required Fire Protection Work
Performed by:_____

_____Dollars ($_____)

The total project cost for all base bid scope items, shall be:

_____Dollars ($_____)

I or We, hereby intend to complete the work required for this project within: ____ Calendar Days.

ALLOWANCES: There are no allowances included in this bid package.

ALTERNATES: There are no allowances included in this bid package.

UNIT PRICES: There are no unit prices included in this bid package.

The bidder hereby certifies that they have a minimum of 5 years' experience performing projects of this type, scale and complexity for private and public institutions.

AUTHORIZED SIGNATURE:_____

TITLE:_____

FIRM'S NAME:_____

ADDRESS:_____

DATE:_____

TELEPHONE:_____

EMAIL:_____

BIDDER'S AFFIDAVIT

STATE OF _____

COUNTY OF _____

_____ being duly sworn, deposes and says that he

resides at_____

_____

and that he is the _____
(Give Title)

of _____
(Name of Organization)

who signed the above Proposal of Bid, that he was duly authorized to sign, that the Bid is the true offer of the Bidder, that the seal attached is the seal of the Bidder and that all declarations and statements contained in the Bid are true to the best of his knowledge and belief.

_____
Affiant

Subscribed and Sworn before me
this day of , 20 .

_____(Seal)
(Notary Public)

_____
(Commission expiration date)

NON-COLLUSION AFFIDAVIT

STATE OF _____

COUNTY OF_____

I,_____of the Municipality of_____in the County of_____and the State of_____being of full age and being duly sworn according to law on my oath depose and say that:

I _____ am _____ of the firm of _____ the bidder making the Proposal for the above named project; that I executed the said Proposal with full authority so to do; that said bidder has not, directly or indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free, competitive bidding in connection with the above named project; that all statements contained in said Proposal and in this affidavit are true and correct, and made with full knowledge; that the Owner relies upon the truth of the statements contained in said Proposal and in this affidavit in awarding the contract for the said project.

Subscribed and sworn to
before me this day
of 20

_____

_____
Notary Public of

My commission expires , 20

BIDDER'S SAFETY ACKNOWLEDGEMENT

The undersigned hereby states that as a principal of the firm submitting this proposal, he or she is fully aware that all safety regulations of the Occupational Safety and Health Administration (OSHA) and the requirements of the State of New Jersey Department of Labor and Industry shall be adhered to on this project and that he or she shall instruct his or her personnel to follow these regulations. These regulations include, but not limited to, the regulations concerning the removal of lead paint, overhead work and work performed on lifts, scaffolds and ladders.

If it is observed by an official representative of the Owner that these safety regulations are not being followed and there exists a potential serious safety deficiency that could result in accident, I acknowledge that this representative may stop the project until the safety deficiency is corrected without any claim for additional compensation by this firm.

_____	_____
WITNESS OR ATTESTED BY	SIGNATURE
_____	_____
DATE	NAME OF ORGANIZATION
	_____
	_____
	PRINT NAME AND TITLE OF PERSON SIGNING

BIDDER'S QUALIFICATION FORM

On the form provided, indicate at least five (5) jobs performed within the last three (3) years of a similar nature and contract amount:

1. Name of Job:_____
   Major Construction Items:_____
   _____
   Architect/Engineer Name, Address, & Telephone Number:_____
   _____

2. Name of Job:_____
   Major Construction Items:_____
   _____
   Architect/Engineer Name, Address, & Telephone Number:_____
   _____

3. Name of Job:_____
   Major Construction Items:_____
   _____
   Architect/Engineer Name, Address, & Telephone Number:_____
   _____

4. Name of Job:_____
   Major Construction Items:_____
   _____
   Architect/Engineer Name, Address, & Telephone Number:_____
   _____

5. Name of Job:_____
   Major Construction Items:_____
   _____
   Architect/Engineer Name, Address, & Telephone Number:_____
   _____

CONTRACTOR INFORMATION

(Please print)

Name of Business:		
Address:		
City:	State:	Zip:
Telephone:		
Email:		
Fax:		
Primary & Alternate Contacts:		
1.	Tel.	Cell
2.	Tel.	Cell
3.	Tel.	Cell
24-Hour Service #		
24-Hour Emergency Number(s) (if applicable):		

ACKNOWLEDGEMENT OF RECEIPT OF CHANGES TO BID DOCUMENTS FORM

NEW JERSEY MANUFACTURER'S INSURANCE GROUP

PROJECT # WT.O.2020.001
ALTERATIONS at FIRST FLOOR LINK BUILDING
WEST TRENTON CAMPUS
301 Sullivan Way
West Trenton, New Jersey 08628

The undersigned bidder hereby acknowledges receipt of the following notices, revisions, or addenda to the bid advertisement, specifications or bid documents. By indicating date of receipt, bidder acknowledges the submitted bid takes into account the provisions of the notice, revision or addendum. Note that the Owner's record of notice to bidders shall take precedence and that failure to include provisions of changes in a bid proposal may be subject for rejection of the bid. If no addendum was received, please initial in the "NONE RECEIVED" space below.

Title of Addendum/Revision	How Received (mail, fax, pick-up, etc.)	Date Received

Acknowledge by bidder: **NONE RECEIVED: _____**

Name of Bidder: _____

By Authorized Representative: _____

Signature: _____

Printed Name and Title: _____

Date: _____

MATERIAL SUBSTITUTION FORM

PROJECT # WT.O.2020.001
ALTERATIONS at FIRST FLOOR LINK BUILDING
WEST TRENTON CAMPUS
301 Sullivan Way
West Trenton, New Jersey 08628

TO THE DESIGNER AND OWNER:

I/we recognize that all **material and detail substitutions must be submitted with the Bid and that we must include with the bid all material attributes, catalogues, data, and performance information for all such substitutions**. The undersigned certifies that all substitutions included in the Bid are herein submitted for approval, at the risk of those substitutions not being approved for use based upon a determination that they are **not equivalent** to what has been drawn or specified.

(Show Company Name on each page of proposed substitute items, please)

_____
(Contracting Company Name)

by: _____ (SEAL)
print name: _____
title: _____

The following _____ items listed herein below are proposed as "equivalent" substitutions:
(*use additional copies of this sheet if necessary*)

ITEM: _____
Item Name and Model Number

_____ | _____
Original Manufacturer's Name *Proposed Manufacturer's Name, Address, Phone*

Materials:_____

Attributes of_____

proposed item:_____

*(List All)*_____

Use additional copies of this sheet if necessary and also include all manufacturers, materials, attributes, catalogues, date, and performance information with the bid. Please show your company name on each page, and SIGN THE FIRST PAGE.

END OF MATERIAL SUBSTITUTION FORM

AGREEMENT

NEW JERSEY MANUFACTURERS INSURANCE COMPANY CONTRACTOR AGREEMENT FOR PROJECT WITH ARCHITECT

NEW JERSEY MANUFACTURERS INSURANCE COMPANY
CONTRACTOR AGREEMENT FOR PROJECT WITH ARCHITECT

[Contractor Legal Name], with an address of [Contractor Address], ("Contractor") and New Jersey Manufacturers Insurance Company, with an address of 301 Sullivan Way, West Trenton, New Jersey 08628 ("NJM") have entered into this Contractor Agreement for Project with Architect ("Agreement") on _____, 20__ (the "Effective Date"). This Agreement is for the following project: [brief description of project] (the "Project"). The architect for the Project is [Architect Legal Name], with an address of [Architect Address] (the "Architect"). NJM and Contractor agree to the following terms and conditions:

1. **Services**. Contractor shall provide the services to NJM as described in the Request for Bids dated [date of RFB] ("RFB") and any Addenda thereto dated [dates of Addenda] (such services are referred to herein as the "Work") in accordance with

a. the terms, conditions and instructions set forth in the RFB and any Addenda, including but not limited to Information for Bidder, Scope of Work, and Proposal forms;

b. Contractor's completed Bid Form submission(s), dated [date of submission];

c. the following documents, executed by Contractor and NJM as necessary, and to which Contractor agrees to be bound: (i) NJM Confidentiality and Nondisclosure Agreement (attached hereto as Exhibit A); (ii) NJM's "Procedures for Services and Construction Contractors" (attached hereto as Exhibit B); and (iii) NJM's standardized insurance requirements (attached hereto as Exhibit C and referenced in Section 12(d) of this Agreement);

d. the following architectural/engineering drawings and specifications: [identify drawings and specifications];

e. the terms contained in this Agreement; and

f. any amendments or modifications to the above documents, provided the same are in writing, mutually agreed upon by the parties, and executed by the parties, including but not limited to an amendment to this Agreement, a Change Order, Construction Change Directive, or a written order for a minor change in the Work issued by NJM or the Architect.

All such documents may be referred to herein collectively as the "Contract Documents". The term "Work" includes all construction and services required by the Contract Documents and all other labor, materials, equipment, and services to be provided by Contractor or a subcontractor to fulfill Contractor's obligations. If in the

Contract Documents an item of Work is referred to in the singular, such reference applies to as many of such items are required to complete the Work. If the drawings or specifications conflict within the same document or with another drawing or specification, Contractor shall provide the better quality or greater quantity of the Work or materials unless otherwise directed by NJM or the Architect.

2. **Term of Agreement**. This Agreement shall commence on the Effective Date. The Work shall be Substantially Complete not later than [days] from the execution of this Agreement, subject to adjustment as provided in this Agreement (the "Contract Time"). The Work shall be considered Substantially Complete when the Work is sufficiently completed in accordance with the terms of this Agreement so that NJM can occupy or utilize the Work for its intended use. Contractor acknowledges that time is of the essence with respect to Contractor's obligations hereunder and that prompt and timely performance of all such obligations is strictly required.

3. **Fees and Expenses**.

a. In consideration for the satisfactory provision of the Work by Contractor, NJM agrees to pay [$SUM] (the "Contract Price"), subject to additions and deductions as otherwise provided in this Agreement.

b. The Contract Price is based upon the following alternates, which are hereby accepted by NJM: [alternates information].

c. The following Unit Prices shall apply to the Work: [insert unit price information].

d. The following Allowances are included in the Contract Price: [insert allowance information].

4. **Payment Terms**. The Contract Price shall be paid over the course of multiple progress payments, as set forth below. Before Contractor submits the first Application for Payment, Contractor shall submit to NJM and the Architect a schedule of values allocating the entire Contract Sum to the various portions of the Work. Such schedule shall be supported by any such information as requested by the Architect or NJM. Unless NJM or the Architect objects to this schedule, the schedule shall be used in reviewing the Contractor's Applications for Payment.

a. NJM may withhold retainage from any payment due as follows: 10% retainage until 50% completion of the Project; 5% retainage until 85% completion of the Project; and 2% retainage until Substantial Completion. Payments due and unpaid under this Agreement shall bear no interest.

b. Contractor shall submit to the Architect Applications for Payment on the standard AIA Application for Payment Form G702. The period covered for each Application for Payment shall be one calendar month. At least

fourteen (14) days prior to submission of an Application for Payment, Contractor shall submit to NJM a pencil copy of the proposed Application for Payment for review and comment.

c. Within seven (7) days of receipt of an Application for Payment, the Architect will either issue to NJM a Certificate for Payment for such amount as the Architect determines is due (with a copy to Contractor), or notify Contractor and NJM in writing of the Architect's reasons for withholding certification in whole or in part. The Architect may withhold a Certificate for Payment if, in the Architect's opinion, the representations to NJM required by Section 4(d) and Section 10 cannot be made. The Architect may also withhold a Certificate of Payment or nullify all or part of a Certificate for Payment previously issued because of: defective Work not remedied; third party claims filed or reasonable evidence indicating probable filing of such claims; failure of Contractor to make payments properly to subcontractors or for labor, materials, or equipment; reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Price; damage to NJM or a separate contractor; reasonable evidence that the Work will not be completed within the term of this Agreement; or failure to carry out the Work in accordance with the terms of this Agreement. NJM shall make payment of the certified amount within thirty (30) days of receipt of the Certificate for Payment.

d. Contractor warrants that title to all Work covered by an Application for Payment shall pass to NJM no later than the time of payment. Further, upon submittal of an Application for Payment, Contractor warrants that all Work for which payment has been received from NJM shall be free and clear of liens, claims, security interests or other encumbrances adverse to NJM's interests.

e. Contractor shall pay all subcontractors, no later than seven (7) days after receipt of payment from NJM, the amount to which each subcontractor is entitled. Such payment shall reflect percentages actually retained from payments to Contractor on account of the subcontractor's portion of the Work. Contractor shall require each subcontractor to make payments to sub-subcontractors in a similar fashion. Neither NJM nor the Architect shall be obligated to pay any subcontractor except as may be otherwise required by law.

f. No Certificate for Payment, progress payment, or partial or entire use or occupancy of the Project by NJM shall constitute acceptance of any Work which is not in accordance with the terms of this Agreement or the Contract Documents.

g. When Contractor considers the Work to be Substantially Complete, Contractor shall submit to the Architect a complete list of items which

shall be completed or corrected prior to final payment (the "Punch List"). Contractor shall complete all Work in accordance with the Contract Documents regardless of whether an item is included on the Punch List. Upon receipt of the Punch List, the Architect will inspect the Work to determine if the Work is Substantially Complete. When the Architect determines the Work is Substantially Complete, the Architect will issue a Certificate of Substantial Completion, in which the Architect will set forth the date of Substantial Completion and fix the time in which Contractor will finish all items on the Punch List. Any warranties required by the Contract Documents will commence upon the date of Substantial Completion, unless otherwise provided in this Agreement or in the Contract Documents. Upon NJM's written acceptance of the Certificate of Substantial Completion, NJM shall pay all retainage applying to the Work. Such payment shall be adjusted for any Work that is incomplete or not in accordance with the Contract Documents.

h. When the Architect receives a final Application for Payment, the Architect will inspect the Work and, if the Architect finds the Work acceptable pursuant to the Contract Documents and the Agreement fully performed, the Architect will issue a final Certificate for Payment. The final certificate will state that to the best of the Architect's knowledge, and on the basis of the Architect's site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the final and remaining balance due to the Contractor, as noted in the final certificate, is payable. Final payment will not be due until Contractor has delivered to NJM a complete release of all liens arising out of this Agreement or receipts in full covering all labor, materials and equipment for which a lien could be filed, or a bond satisfactory to NJM to indemnify NJM against such lien, at NJM's option. If any such lien remains unsatisfied after payments are made, Contractor shall promptly refund to NJM all money that NJM may be compelled to pay in discharging the lien, including costs and actual attorneys' fees. Final payment also shall not be due until the Work is Substantially Complete and all Punch List items have been completed, except for Contractor's responsibility to correct Work as provided by this Agreement.

i. NJM's payment of the final payment shall waive all claims by NJM except those arising from: liens, claims, security interests or encumbrances arising out of the Agreement and unsettled; failure of the Work to comply with the Contract Documents; or terms of any warranties required by the Contract Documents. Contractor's acceptance of final payment (or any acceptance of final payment by a subcontractor or material supplier) constitutes a waiver of claims by the Contractor, subcontractor, or material supplier, as the case may be, except those previously made in writing and identified as unsettled at the time of the final Application for Payment.

5. **Submittals**. Contractor shall submit to NJM and the Architect (in a format agreed upon by all parties) all shop drawings, product data, samples, and similar submittals required by the Contract Documents, in a timely manner to allow the Architect and NJM to review and approve such submittals. Prior to such submission, Contractor shall review the submittals for compliance with the Contract Documents. By submitting such submittals, Contractor warrants to NJM and the Architect that Contractor has reviewed and approved the submittals; has determined and verified related materials, field measurements and field construction criteria; and has checked and coordinated the information contained in each submittal with the requirements of the Work and the Contract Documents. Contractor shall indicate his checking and coordination of the information contained within the submittals by stamping each sheet of the prints and originals. Submittals (whether submitted for the first time or resubmitted) may be rejected for cause by NJM or the Architect. A rejection shall not become the basis for a claim or delay or extension of time. The Work shall be performed in accordance with the approved submittals. Contractor shall not perform any portion of the Work for which Contract Document require submission and review of submittals until such submittal is approved by NJM or the Architect.

6. **Access to Work; Cleaning Up; Cutting and Patching**. Contractor shall provide NJM and Architect with access to the Work in preparation and progress wherever located and at any time. 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, and patching shall be restored to their original condition unless otherwise required by the Contract Documents. Contractor shall keep the project site and surrounding areas in a clean and safe condition. Contractor shall restore the affected portions of the Project site on a daily basis as required by the Contract Documents. Upon completion of the Work, Contractor shall remove from the Project site waste material, rubbish, Contractor's tools, construction equipment, machinery, and surplus material. If Contractor fails to clean up as provided herein or in the Contract Documents, NJM may do so and shall be entitled to immediate reimbursement from the Contractor or may deduct such costs from the final payment due to the Contractor.

7. **Additional Contractor Obligations**.

   a. Contractor represents and warrants that Contractor has visited the Project 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.

   b. Contractor shall, before starting any and all portions of the Work, carefully study and compare the pertinent Contract Documents relative to each portion of the Work, as well as any additional information furnished by NJM. Contractor shall also take field measurements of any existing conditions related to such portion of the Work and shall observe any conditions of the Project site affecting such portion of the Work. Contractor shall promptly report to NJM and the Architect in writing any errors, inconsistencies, or omissions discovered or made known to

Contractor. It is Contractor's responsibility to bring any discrepancies to the attention of NJM and the Architect prior to the start of any work. If Contractor performs any work knowing that a discrepancy exists, Contractor shall fully bear the cost of any corrections required by NJM or the Architect.

c. Contractor is not required to determine if the Contract Documents comply with applicable laws, statutes, ordinances, codes, etc. or any lawful orders of public authorities. However, if Contractor becomes aware of any such noncompliance, Contractor shall promptly report to NJM and the Architect in writing any such noncompliance.

d. Contractor shall supervise and direct the Work, using its best skill and attention. Contractor shall be solely responsible for and have control over means, methods, techniques, sequences and procedures, including safety precautions, and for coordinating all portions of the Work, unless the Contract Documents give other specific instruction. Contractor shall be fully responsible to NJM for acts and omissions of Contractor employees, subcontractors and their agents and employees, and other persons or entities performing portions of the Work for or on behalf of Contractor or any of its subcontractors.

e. Contractor shall maintain project documentation at the Project site in an orderly manner. Such documentation shall include, but is not limited to, record drawings and specifications, supplemental instructions of the Architect, Change Orders, Construction Change Directives, correspondence, approved submittals (including any shop drawings), requests for information, requisitions, and names and addresses of contractors, subcontractors and principal material suppliers.

f. Contractor shall prepare daily "general supervision reports" and maintain a daily personal journal or diary. This journal shall include (but not be limited to), the following: weather conditions; nature and location of work being performed; verbal instructions and interpretations given to Contractor; specific observations; a record of occurrences of work that may result in a claim for a change in Contract Price or contract time; and a list of visitors, including their titles, relationship to the Project; and purpose of visit. Contractor shall provide a copy of the general supervision repots to NJM promptly upon request.

g. Contractor shall attend all job meetings and generate and distribute accurate and complete meeting minutes for all meetings.

h. Contractor shall observe, record, and report all test procedures and results. Contractor's actions shall not serve as the standard and/or official records or reports which may be required to be prepared or

submitted to governing bodies by a testing authority, Contractor and/or others.

i. Contract shall review all Change Orders and requisitions with NJM's designated representative prior to submission for review, approval and payment. If any work is performed on a time and materials basis, Contractor must review and approve time and materials slips on a daily basis.

j. Contractor is responsible for the coordination of all of its subcontractors (if any) and all other persons or entities engaged to perform or furnish portions of the Work. Contractor is responsible for dissemination of relevant communications and information to subcontractors and any other parties. Subcontractors and all other persons or entities engaged to perform or furnish portions of the Work by Contractor are agents of Contractor and Contractor is totally and entirely responsible for their performance in all respects.

8. **Labor and Materials**.

a. Unless otherwise provided in the Contract Documents, 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.

b. Contractor shall enforce strict discipline and good order among Contractor's employees and other persons carrying out the Work. Contractor shall ensure that Contractor's employees and other persons carrying out the Work abide by the rules of the worksite outlined in the Contract Documents. Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

c. Contractor may make a substitution only with NJM's written consent and only after evaluation by the Architect.

d. Contractor is responsible for safe storage and protection against theft or damage of all materials until they have been properly incorporated in the Project and of all tools and equipment owned by Contractor or Contractor's subcontractors until removed from the premises at the completion of the Project.

9. **The Architect**.

a. The Architect will provide administration of the Project and will be NJM'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 NJM only to the extent provided in the Contract Documents, unless otherwise agreed upon in writing.

b. The Architect will visit the site at appropriate intervals to become generally familiar with the progress and quality of the portion of the Work completed and to determine, in general, if the Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. The Architect will not be required to make exhaustive or continuous site observations to check the quality or quantity of the Work.

c. The Architect will keep NJM reasonably informed about the progress and quality of the Work completed, and will report to NJM: (1) known deviations from the Contract Documents, and (2) defects and deficiencies observed in the Work.

d. Based on the Architect's evaluations of the Work and Contractor's Applications for Payment, the Architect will review and certify the amounts due to Contractor's and will issue Certificates for Payment in such amounts. The Architect has the authority to reject Work that does not conform to the Contract Documents.

e. The Architect will review and approve or take other appropriate action upon Contractor's submittals, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

f. The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents upon the written request of NJM. The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the work. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions.

g. The Architect will determine the date of Substantial Completion and the date of final completion; will issue the Certificate of Substantial Completion; will receive and forward to NJM written warranties and related documents required by the Contract Documents and assembled by Contractor; and will issue a final Certificate of Payment.

h. The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests shall be made in writing within a reasonable time. If appropriate, the Architect will prepare and issue supplemental drawings and specifications in response to the requests for information.

10. **Contractor Warranties**.

a. Contractor warrants to NJM and the Architect that all materials and equipment furnished pursuant to this Agreement will be of good quality and new unless the Contract Documents require or permit otherwise. Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects and performed in a professional and workmanlike manner. Work, materials, or equipment not conforming to these requirements may be considered defective. Subject to the provisions of this Agreement, Contractor's warranty excludes any remedy for damage or defect caused by abuse, alterations to the Work not executed by Contractor or Contractor's subcontractors or agents (or not otherwise authorized by Contractor), improper or insufficient maintenance, improper operation or normal wear and tear under normal usage. All other warranties required by the Contract Documents shall be issued in the name of NJM (or shall be transferable to NJM).

b. Contractor warrants that all materials, equipment and workmanship shall remain as fully completed and in accordance with the Contract Documents for a period of one (1) year from the date of final payment. Other than for normal wear and tear, the equipment shall function as if new, and all materials and workmanship shall be as if original, at the end of this one-year period. Contractor shall promptly repair, replace or remedy, at its expense, any equipment, material, or workmanship in which defects appear during this one-year period. Any conditions inconsistent with Contract Documents which appear during this one-year period shall be, upon NJM's request, promptly repaired, replaced, or remedied by Contractor at Contractor's expense. All work shall remain in accordance with the Contract Documents, normal wear and tear excepted, through the date that is one year from the date of final payment, irrespective of the dates equipment or materials were incorporated into the Work or the date any portion of the Work was completed. However, if the equipment or materials were incorporated into the Work or the Work was completed after the date of final payment, the warranty period described in this paragraph shall be extended to include that Work. The provisions of this paragraph do not limit, in any way, the requirements of any special warranties described elsewhere in the Contract Documents.

c. One (1) year from the date of final payment, Contractor shall attend a walk-through of the Project to ascertain whether all conditions remain in accordance with the Contract Documents. NJM shall attend the walk-through, and the walk-through shall be scheduled by mutual agreement of Contractor and NJM. The Architect may attend the walk-through at NJM's option.

d. In the event that the specifications contained within the Contract Documents require Contractor to furnish any special warranties, Contractor's furnishing of such special warranties does not relieve Contractor from responsibility for defective Work or for Work not in accordance with the Contract Documents.

e. Contractor shall pay all sales, consumer, use, and other similar taxes for the work provided by Contractor.

f. Contractor shall comply with and give any notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work. If Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, Contractor shall assume responsibility for such Work and shall bear the costs attributable to correction.

g. Contractor represents that it is fully experienced and properly qualified to perform the Work and that it is properly licensed, equipped, organized, and financed to perform such services. Contractor shall act as an independent contractor in performing the Work and shall maintain complete control over its employees.

11. **Changes in the Work**.

a. NJM may order changes in the Work within the general scope of the Project consisting of additions, deletions, or other revisions, with the Contract Price and Contract Time being adjusted accordingly. Such changes shall be authorized by a written Change Order signed by NJM, Contractor, and the Architect, or by a written Construction Change Directive signed by NJM and the Architect. Upon issuance of a Change Order or Construction Change Directive, Contractor shall proceed promptly with such changes in the Work, unless otherwise provided by the Change Order or Construction Change Directive.

b. Adjustments in the Contract Price and Contract Time resulting from a change in the Work shall be determined by mutual agreement of the parties. However, in the case of a Construction Change Directive signed only by NJM and the Architect, adjustments in the Contract Price and Contract Time shall be determined by Contractor's actual cost of labor, material, equipment, and overhead and profit as set forth in Section 11(b)(i) below. When NJM and Contractor agree on adjustments to the Contract Sum and Contract Time arising from a Construction Change Directive, the Architect shall prepare a Change Order.

    i. The allowance for combined overhead and profit included in Change Order and Construction Change Directive costs to NJM

shall be based on the below schedule. Costs associated with proposal preparation and negotiation, including cost estimating and schedule analysis are excluded from overhead and profit cost and are considered non-compensable whether or not Contractor's proposal is accepted.

For Contractor:	15% of the cost of work performed by Contractor's own forces
For Contractor:	10% of the amount due Contractor's subcontractor
For each subcontractor or sub-subcontractor:	15% of the cost of work performed by each the subcontractor or sub-subcontractor
For each subcontractor	10% of the amount due the subcontractor's sub-subcontractor

c. The Architect shall have authority to order minor changes in the Work not involving adjustment in the Contract Price or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on NJM and Contractor. Contractor shall carry out such written orders promptly. If Contractor believes that the proposed minor change in the Work will affect the Contract Price or Contract Time, Contractor shall immediately notify the Architect and shall not proceed to implement the change in the Work.

d. If concealed or unknown physical conditions are encountered at the site that differ materially from those indicated in the Contract Documents or from those conditions ordinarily found to exist, the Contract Price and Contract Time shall be equitably adjusted as mutually agreed upon by NJM and Contractor. However, Contractor must provide written notice to NJM and the Architect promptly and before such conditions are disturbed.

12. **Safety Requirements; Hazardous Materials and Substances; Insurance Requirements**.

a. Contractor is responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Work and in accordance with the Contract Documents. Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to: (i) employees on the Work site and other persons who may be affected thereby; (ii) the Work and materials and equipment to be incorporated into the Work, whether in storage on or off the site, or under the care, custody or control of Contractor, Contractor's subcontractors, or a sub-subcontractor; and (iii) other property at the site or adjacent thereto,

including but not limited to trees, shrubs, lawns, walks, pavements, roadway, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

b. Contractor shall comply with NJM's safety protocols, applicable laws, statutes, ordinances, codes, rules and regulations and lawful orders of public authorities bearing on the safety of persons and property and their protection from damage, injury, or loss. Contractor shall also give any notices required by the Contract Documents. Contractor shall promptly remedy any damage and loss to property caused in whole or in part by Contractor, a subcontractor, a sub-subcontractor, or anyone directly or indirectly employed by any of them, or anyone for whose acts they may be liable.

c. Contractor is responsible for compliance with the requirements of the Contract Documents regarding hazardous materials. If Contractor encounters a hazardous material or substance not addressed in the Contract Documents, Contractor shall immediately stop Work in the affected area and report the condition, in writing, to NJM and the Architect. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of NJM and Contractor. By Change Order, the Contract Time shall be extended appropriately.

d. During the performance of the Work and for one year from the date of final completion of the project (and for the length of time required by the Contract Documents, if such time is longer), and with respect to Contractor's completed operations coverage, Contractor shall maintain in full force and effect, at its sole expense, insurance adequate to meet fully NJM's standardized insurance requirements, attached hereto as Exhibit C. Prior to execution of this Agreement, Contractor shall furnish proof of all such insurance and will provide additional proofs in the future upon renewal and at any time immediately upon NJM's request. Contractor shall be responsible for ensuring that each subcontractor and sub-subcontractor maintains insurance at the limit specified in Exhibit C or as required by law, whichever is greater, and names NJM as additional insured, as may be required by Exhibit C. Each policy shall contain a provision that the policy will not be canceled or allowed to expire and that its limits will not be reduced until at least thirty (30) days' prior written notice has been given to NJM.

13. **Work Adjacent to Occupied Spaces**. Work required as part of this Project is to occur directly adjacent to occupied spaces. It is Contractor's responsibility to maintain the safety of all persons occupying these spaces from construction activities. Contractor must ensure that Contractor's work will not adversely affect any system, building element or other item that could potentially endanger persons in adjacent spaces. Contractor must establish, maintain and extend (as may be required) a physical barrier

between the Work site and occupied spaces. This barrier shall be constructed to prevent construction debris, dust and other contaminants from entering occupied spaces. Contractor shall also establish and maintain safe routes of entrance and egress to all spaces adjacent to construction activities.

14. **Emergencies**. In an emergency affecting the safety of persons or property, Contractor shall act (at Contractor's discretion) to prevent threatened damage, injury or loss. Additional compensation or extension of time as may be required on account of the emergency, and not due to Contractor's negligence, shall be determined by mutual written agreement of the parties.

15. **Correction of Work**. Contractor shall promptly correct Work rejected by the Architect or NJM or which fails to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed, or completed. Costs of correct such rejected Work (including additional testing and inspections, cost of uncovering and replacement, and compensation for the Architect's services and related expenses) shall be the Contractor's responsibility.

16. **NJM's Right to Stop the Work; NJM's Right to Carry Out the Work**.

a. If Contractor fails to correct Work which is not in accordance with the Contract Documents, or fails to carry out the Work in accordance with the Contract Documents as determined by NJM or the Architect, NJM may issue a written order to Contractor to stop the Work (or any portion of the Work) until the cause for such order is eliminated. However, NJM's right to stop the Work shall not give rise to a duty on the part of NJM to exercise this right for the benefit of Contractor or any other person or entity.

b. If Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents, Contractor shall, within 10 days of receipt of written notice from NJM, commence and continue correction of such default or neglect. If Contractor fails to do so, without prejudice to any other remedies NJM may have, NJM may correct such default or neglect and may deduct the cost thereof, including NJM's expenses and compensation for the Architect's necessary services, from any payment due to Contractor.

c. NJM reserves the right to perform construction or operations related to the Project with NJM's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site. Contractor shall afford NJM and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate Contractor's activities with NJM's activities and separate contractors' activities as required by the Contract Documents.

17. **Termination**.

a. Termination by Contractor. In the event that NJM fails to make payment within thirty (30) days following receipt and approval of a Certificate for Payment, Contractor may, upon thirty (30) additional days' written notice to NJM and the Architect, terminate this Agreement. In the event of such termination, Contractor shall be entitled to full payment for Work satisfactorily performed up to the date of termination.

b. Termination by NJM. NJM may terminate this Agreement if Contractor: (i) refuses or fails to supply enough properly skilled workers or proper materials; (ii) fails to make payment to subcontractors for materials or labor in accordance with the respective agreements between Contractor and the subcontractors; (iii) disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or (iv) breaches a provision of the Contract Documents.

c. Termination by NJM for Convenience. NJM may, at any time and for any or no reason, terminate this Agreement for NJM's convenience and without cause. Contractor shall be entitled to full payment for Work satisfactorily performed up to the date of termination, along with reasonable overhead and profit for Work not executed.

18. **Subcontractors**. Contractor shall not subcontract any of the Work without the prior written consent of NJM. Prior to the commencement of any work by any subcontractor, Contractor shall enter into a written agreement with such subcontractor that binds the subcontractor to terms that are at least as protective of the rights and information of NJM under this Agreement, and Contractor shall subcontract only with subcontractors that have the requisite skills to perform any subcontracted obligations in accordance with the terms of this Agreement. In all cases, Contractor shall be responsible and liable for the acts and omissions of each subcontractor (including its employees and agents) to the same extent as if such acts or omissions were by Contractor (or its employees or agents) and shall be responsible for all fees and expenses payable to any subcontractor. All pre-approved subcontractor must complete a NJM contractor qualification package.

19. **Indemnification**. Contractor shall defend, indemnify and hold harmless NJM and its agents and employees from and against all claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or alleged to have arisen out of or resulting from performance of the Work, to the extent caused or alleged to have been caused by the negligent, intentional, and/or wrongful acts or omissions of Contractor, any subcontractor of Contractor, or anyone directly or indirectly employed by them or anyone for whose acts they may be liable.

20. **Who is Bound**. This Agreement binds the parties hereto, their owners, affiliates, subsidiaries, employees, agents and independent contractors acting on their behalf, as well as their assignees, successors in interest, heirs and personal or legal representatives, including attorneys, executors and administrators.

21. **Effect of Waiver of Terms of this Agreement**. The failure of any party at any time to require the strict performance by the other of any of the terms, provisions or conditions hereof shall in no way affect the right thereafter to enforce the same, nor shall the waiver by any party of any breach of any of the terms, provisions and conditions hereof be construed or deemed a waiver of any succeeding breach of any term, provision or condition thereof.

22. **Modification Only with Same Formality as This Agreement**. This Agreement, or any provision hereof, may not be altered, amended, modified, terminated, rescinded or discharged orally, and no amendment or modification hereof shall be binding, enforceable, valid or admissible in evidence in any action or proceeding of any nature, unless the same is in writing and duly executed by all parties with the same formality as this Agreement.

23. **Notices**. Any and all notices, demands and other communications required or permitted to be given under this Agreement (excluding invoices, submittals, change order requests, or similar regular construction correspondence which shall be delivered to NJM's designated representative as mutually agreed upon by the parties) (each a "Notice") shall be delivered in writing and addressed to the other party at the addresses set forth on the first page of this Agreement (or to such other address that the receiving party may designate from time to time in accordance with this section). In addition, a copy of any Notice addressed to NJM shall also be in writing and delivered to the following address: New Jersey Manufacturers Insurance Company, 301 Sullivan Way, West Trenton, NJ 08628, Attn.: General Counsel. Each party shall deliver all Notices by personal delivery, nationally recognized overnight courier (with all fees prepaid), or by certified or registered mail (in each case, return receipt requested, postage prepaid). For the avoidance of doubt, the term "Notice" includes, but is not limited to, the following: claims or demands; notices of termination or default; notices required by applicable law, regulation, etc.; notices related to concealed, unknown, or unexpected physical conditions (as described in this Agreement); and notices related to insurance requirements.

24. **Assignment**. Neither party may assign the Agreement without the written consent of the other.

25. **Captions for Convenience Only**. The captions and headings to the various paragraphs of this Agreement are inserted for convenience of reference only, and shall not have the effect of amending or changing the express terms or provisions of this Agreement.

26. **Ambiguities**. The parties agree that the terms and language of this Agreement were the result of good faith negotiations by, between and among them. As

a result, there shall be no presumption that this Agreement shall be construed more strictly against any one party.

27. **Governing Law**. This Agreement, and all rights, obligations and liabilities arising hereunder, shall be construed under and enforced in accordance with the laws of the State of New Jersey, and any action brought to enforce such rights, obligations and liabilities shall be subject to the exclusive jurisdiction of the state and federal courts of the State of New Jersey.

28. **Entire Agreement**. This Agreement is the complete and full understanding between the parties and shall supersede all prior oral and written agreements regarding the subject matter.

Accepted By: New Jersey Manufacturers Insurance Company

By: _____

Title: _____

Date: _____

Accepted By: [Contractor Name]

By: _____

Title: _____

Date: _____

Exhibit A – Confidentiality and Nondisclosure Agreement
Exhibit B – Contractor Procedures
Exhibit C – Insurance Requirements

EXHIBIT A

NEW JERSEY MANUFACTURERS INSURANCE COMPANY
CONFIDENTIALITY AND NONDISCLOSURE AGREEMENT

EXHIBIT A
New Jersey Manufacturers Insurance Company
Confidentiality and Nondisclosure Agreement

This Agreement is effective upon execution, and if applicable, amends and is part of any Agreement executed by and between New Jersey Manufacturers Insurance Company ("NJM") and _____ ("Contractor").

WHEREAS NJM may have obligations to comply with regulations promulgated by the Federal Trade Commission pursuant to the Gramm-Leach-Bliley Act, 15 U.S.C., Subchapter 1, Section 6801-6809 (the "Act"); and

WHEREAS NJM may have obligations to comply with N.J.S.A. 17:23A-1 et seq., the New Jersey Insurance Information Practices Act; and

WHEREAS NJM may have obligations to comply with N.J.A.C. 11:1-44, Standards for Safeguarding Customer Information; and

WHEREAS NJM has provided its customers with a Privacy Rights Policy, a copy of which is attached to this Agreement; and

WHEREAS, under NJM's Privacy Rights Policy and the aforementioned laws, NJM must protect certain of its data containing consumer nonpublic personal information ("NPI") and wishes to ensure that Contractor shall protect all of NJM's customer information consistent with these laws, regulations, and the NJM Privacy Rights Policy.

NOW, THEREFORE, Contractor hereby agrees to abide by the NJM Customer Privacy Policy Statement and the following terms and conditions:

1. Contractor acknowledges that NJM may provide: (i) information and access to confidential/proprietary information, including but not limited to NPI, about its policyholders, claimants, and other third parties; and/or (ii) information and access to information about its methods of business processes, customer lists, marketing strategies, trade secrets, and nonpublic financial information. All such information is deemed to be confidential and shall not be disclosed to any third party. This information shall be protected by Contractor in the same manner that Contractor own confidential information is protected.

2. In the event that Contractor is requested or required to disclose such confidential information pursuant to but not limited to, interrogatories, subpoenas or similar process, Contractor shall provide NJM with written notice of any such request for such information prior to disclosure so as to give NJM an opportunity to object.

3. If applicable, at the conclusion of this engagement, Contractor shall return any and all confidential NPI to NJM.

4. Contractor shall take reasonable steps to preserve the security, confidentiality and integrity of all NJM confidential proprietary information.

5. Trade secrets of NJM including but not limited to NJM's methods of business processes, customer lists, marketing strategies, and nonpublic financial information shall be received and held by Contractor in strict confidence and will be used only for the purpose of this engagement.

6. Contractor acknowledges that the disclosure of confidential/proprietary information without NJM's written consent, which consent shall not be unreasonably withheld, may give rise to continuing irreparable injury to NJM, that, therefore, will be inadequately compensable in damages at law. Accordingly, NJM shall be entitled to obtain immediate injunctive relief against the breach or threatened breach by Contractor of this Confidentiality and Nondisclosure Agreement, in addition to any other legal remedies which may be available, and Contractor consents to the obtaining of such injunctive relief.

7. **Contractor agrees that it will notify NJM of any breach of security of the confidential and/or proprietary information described herein immediately following discovery.**

8. The terms of this Confidentiality and Nondisclosure Agreement will override and control any conflicting terms or conditions of any Agreement entered into by NJM and Contractor.

9. This Agreement shall survive the termination of any Agreement entered into by NJM and Contractor, and shall apply with equal force to subsequent agreements entered into between the parties hereto.

IN WITNESS WHEREOF, NJM and Contractor execute this Agreement effective on the last date below.

New Jersey Manufacturers Insurance Company	Contractor
By: _____	By: _____
Name (print): _____	Name (print): _____
Title: _____	Title: _____
Date: _____	Date: _____

EXHIBIT B

NEW JERSEY MANUFACTURERS INSURANCE COMPANY
PROCEDURES FOR SERVICE AND CONSTRUCTION CONTRACTORS
WEST TRENTON

NJM Insurance Group
NEW JERSEY MANUFACTURERS INSURANCE COMPANY
301 Sullivan Way, West Trenton, NJ 08628
609-883-1300 / www.NJM.com

EXHIBIT B

Procedures for Service and Construction Contractors
West Trenton

The following procedures must be observed when working at NJM facilities. Familiarize yourself with these procedures before starting work at NJM. The responsible manager must sign this form and is responsible to ensure that all employees understand and comply with the procedures. Any questions, clarifications or exceptions should be cleared with your NJM contact person.

Parking – See your NJM contact for parking details. Park only in assigned areas, observe speed limits and traffic signs at all times.

Sign-In/Badge – All Contractors must register at the Security Station or Reception Desk when arriving to work at an NJM facility. A Visitor Badge or ID Badge must be prominently displayed when in the NJM buildings. If possible, coordinate arrival with your NJM contact to arrange appropriate access. Always sign out and turn in your badge when leaving the facility.

Attire – Modest, non-offensive attire must be worn at all times on NJM property. Tanks and shorts are not allowed.

Smoking – NJM campuses are tobacco-free. Smoking or use of a tobacco product is prohibited on NJM property.

Cafeteria – See your NJM contact for details. Contractors working inside the building as part of their regular contract may be permitted to use the Greenhouse area of the cafeteria ONLY from 8:30 a.m. to 9 a.m. and from 11:15 a.m. to 11:45 a.m. If the Contractor employees are unable to take lunch or break during these time frames, an alternate location will have to be set up with your NJM contact.

Rest Rooms – See your NJM contact for arrangements. Upon approval from NJM, contractors may be allowed to use the rest rooms immediately outside the cafeteria and those near Security Station #1. No other rest rooms should be used. Contractors working outside the building should arrange for and use portable outdoor rest room facilities.

Material Transport -- Transport all material through basement corridors and tunnels whenever possible. Coordinate with your NJM contact if other routes may be required.

Safety/OSHA Compliance – Compliance with all OSHA regulations is mandatory.

- **Hot Work** (where there is a potential for open flame, spark, arc, etc.) mandates the acquisition of a **Hot Work Permit** from NJM. See your NJM contact. Without

specific written permission, no hot work is allowed during normally scheduled business hours (8 a.m. to 5 p.m. weekdays).

- **Lockout/Tagout, Line Breaking, and Confined Space Entry** situations must be cleared with your NJM contact to ensure compliance with NJM safety protocols prior to initiation.

Fire Suppression/Fire Alarm System – Work impacting these systems in any way should not be scheduled or initiated without prior clearance from your NJM contact.

Building Systems – Contractors must be attentive to the impact their work may have on the following:

Business Operations	HVAC	Landscaping/Grounds
Fire Alarm System	Electrical Power	Elevators/Escalators
Water/Sewer	Telecommunications	

Work Area Maintenance – Work areas must be designated with appropriate signs and barriers. Areas should be kept neat and organized. If access to the Utility Courtyard is required, the access gate must remain closed at all times except when vehicles are entering or exiting the area.

Waste Material – Contractors are responsible for the removal and disposal of all waste materials, including hazardous materials, resulting from the work being conducted in accordance with applicable EPA and NJDEP regulations.

Emergency Evacuation – In an emergency or general alarm condition, you should shut down powered equipment and exit the building immediately. Do not block exits, entrances, or lanes near the building.

Privacy – You are expected to ensure that your employees are aware of the Confidentiality and Non-Disclosure Agreement between your company and NJM and that they abide by the terms of that agreement.

Accountability – NJM considers you and your company accountable for any damage or disruption related to your activity on NJM property.

In an emergency dial: **Ext. 5555**

Policies Against Violence, Discrimination and Harassment in the Workplace – NJM has adopted policies strictly prohibiting violence, discrimination and harassment in the workplace. (See attached.) You are expected to ensure that your employees are aware of and abide by these prohibitions.

Your NJM contact is: John Rzepka Ext. 7910

Company Name: _____

Your Name (Please Print): _____

Signature: _____Date_____

Your Title: _____

EXHIBIT B continued

NJM Policy Against Discrimination and Harassment

The NJM Insurance Group supports all Federal and State laws prohibiting discrimination based on race, color, age, national origin, sex, marital status, religion or disability. We seek to maintain a working environment that is free of discriminatory, hostile or abusive conditions. Words, gestures, actions or other behavior that tends to annoy, alarm, intimidate, ridicule, embarrass or insult employees in a manner that creates hostility on our premises will not be tolerated.

Harassment on the basis of sex is prohibited. Unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature constitute harassment when (1) submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment, (2) submission to or rejection of such conduct by an individual is used as the basis for employment decisions affecting such individual, or (3) such conduct has the purpose or effect of unreasonably interfering with an individual's work performance or creating an intimidating, hostile, or offensive working environment. Sexual harassment is also described as unwelcome conduct that is based on gender, whether the behavior is verbal or physical in nature, regardless of the peer, supervisory or other relationship between the parties, and regardless of whether the manifestation of the harassment is requests for sexual favors, sexist remarks, or behavior which denigrates a person because of the person's sex or sexual orientation.

Policy Against Violence in the Workplace

The NJM Insurance Group is committed to providing a safe and secure work environment for employees and others conducting business on its premises. We seek to maintain a working environment that is free of hostile or abusive conditions. Words, gestures, actions or other behavior that tends to alarm or intimidate employees, customers, and visitors in a manner that creates hostility on our premises will not be tolerated.

Violence in the workplace, or threatened violence in the workplace, is strictly prohibited. No reference to violence or joking about violence will be tolerated. All employees should be treated with courtesy and respect at all times.

The NJM Insurance Group prohibits the following types of behavior or similar activities:

- Threatening, intimidating, coercive, abusive, harassing, or violent verbal, written, or physical behavior, or the suggestion of such behavior, toward others, including coworkers, customers, and visitors

- Possession of firearms, knives, explosives, or other weapons anywhere on Company property (including in Company vehicles or in private vehicles on Company property) or while conducting Company business

- Fighting on Company property or while conducting Company business

- Willful destruction of Company property or the property of others

Office furniture and electronic equipment are the property of the NJM Insurance Group. We reserve the right to enter or inspect your work area including, but not limited to, desks, cabinets and computer hard drives and storage disks, with or without notice for just cause. We also reserve the right to inspect employees and their personal possessions should there be a reasonable suspicion that someone is in violation of this Policy.

The NJM Insurance Group expects employees (anonymously if they choose) to immediately report to Security:

- Actual acts of violent behavior
- Threatened violent acts
    - Possession of firearms, knives, explosives, or other weapons anywhere on Company property (including in Company vehicles or in private vehicles on Company property) or while conducting Company business
    - Willful destruction of Company property or the property of others

Complaint Filing and Investigation Procedures

Any employee who is the victim of violent conduct or threats of violence by a supervisor, coworker or any other person on our premises or within the context of a business relationship may seek advice or file a complaint as follows:

A complaint may be made in writing or orally to the complaining employee's immediate supervisor, the Department Head, the Human Resources Director, the Director of the Special Investigations Unit or the General Counsel. Supervisory staff are to immediately inform the Human Resources Director, the Director of the Special Investigations Unit or the General Counsel of any complaint of violence or threatened violence. Upon communication of a complaint of conduct prohibited by this Policy, the matter will be investigated promptly.

Confidentiality

To the fullest extent practicable, inquiries and complaints will be kept confidential among the persons/parties necessary to resolve the matter.

Prohibition Against Retaliation

Retaliation in any form against any person who complains of violence or threatened violence in the workplace or who assists in the investigation of such complaints is expressly prohibited. A charge of retaliation may be raised at any step of the complaint procedure or may form the basis of a new complaint.

EXHIBIT C

NEW JERSEY MANUFACTURERS INSURANCE COMPANY
CONTRACTOR INSURANCE REQUIREMENTS

NJM Insurance Group

NEW JERSEY MANUFACTURERS INSURANCE COMPANY
301 Sullivan Way, West Trenton, NJ 08628
609-883-1300 / www.NJM.com

EXHIBIT C

Contractor Insurance Requirements

The following insurance coverage is required for contractors working in support of our Facility Operations Department. The term for each policy must be valid while work is being performed. Completed operations coverage shall be maintained in force for one year from the date of final completion of the project or as described in the contract, whichever is later.

Please have copies of your current *Certificates of Insurance* forwarded to Facility Operations Department at the above address. Forward certificate at each policy renewal.

Coverages Required	Limits		Additional Insured		Hold Harmless	Primary & Non-contributory	Defense & Indemnification	Waiver of Subrogation
1. Workers' Compensation Employer's Liability Insurance	Statutory	R						
2. Business Auto including owned, hired, rented and borrowed autos	$1,000,000 Combined Single Limit	R	P					P
3. Commercial General Liability including board form contractual liability & broad form property damage	$2,000,000 per occurrence $4,000,000 aggregate limit	R	On-Going Operations CG 2010 or CG2033 or equivalent R	Completed Operations[i] CG 2037 equivalent R	R	R	R	R
4. Professional Liability	$1,000,000 per claim $3,000,000 annual aggregate	N						
5. Umbrella Liability	$5,000,000	R						

R=required P=preferred N=not required

Subcontractor's Business Auto, Commercial General Liability, Professional Liability and Umbrella insurance (when required) must be at the same limits and contain the same conditions required for the contractor.

Insurance carriers shall be authorized to write insurance in the State of New Jersey and be rated A- or higher (under Best rating system or its equivalent).

[i] Completed operations coverage shall be maintained in force for one year from the date of final completion of the project or as described in the contract, whichever is later.

EXHIBIT D

NEW JERSEY MANUFACTURERS INSURANCE COMPANY
CONTRACTOR BUSINESS REGISTRATION REQUIREMENTS

NEW JERSEY MANUFACTURERS INSURANCE COMPANY
CONTRACTOR INSURANCE REQUIREMENTS

NJM Insurance Group
NEW JERSEY MANUFACTURERS INSURANCE COMPANY
301 Sullivan Way, West Trenton, NJ 08628
609-883-1300 / www.NJM.com

ATTACHMENT D

State of New Jersey

A new State Law requires businesses that engage construction Contractors to withhold New Jersey Gross Income Tax if they are unincorporated or have not registered with the State. See N.J.S.A. 54A:7-1. NJM does not have the ability to put construction Contractors on its tax withholding system.

Effective January 1, 2007, New Jersey Manufacturers Insurance (NJM) will not engage any construction Contractor or their Sub-Contractor(s) who has not presented proof that they are either incorporated or have registered with the Division of Revenue, New Jersey Department of Treasury.

To satisfy this requirement, please forward a copy of your current W-9, that confirms your Taxpayer Identification Number, and a copy of your BUSINESS REGISTRATION CERTIFICATE if your business is registered with the State of New Jersey, Department of Treasury, Division of Revenue.

If you are not incorporated and do not have a Business Registration Certificate, you can go to the web site www.nj.gov/treasury/revenue/busregcert.htm to register.

SECTION 007300 – SUPPLEMENTAL PROJECT CONDITIONS

OWNER

1.1 GENERAL:

A. Assignment of the Work: Neither this Contract nor any part thereof shall be assigned by a Contractor to any person, firm, or corporation, without prior written approval of the Owner to such assignment. This provision shall not preclude the Contractor from subletting parts of the work to Subcontractors in accordance with general practices of the trade.

B. Prohibited Interests: No official of the Owner who is authorized in such capacity and on behalf of the Owner to negotiate, make, accept, or approve, or to take part in negotiating, making, accepting, or approving any architectural, engineering, inspection, construction, or material supply contract or any subcontract in connection with the construction of the Project shall become directly or indirectly interested personally in this Contract or in any part thereof. No officer, employee, architect, attorney, engineer, or inspector of or for the Owner who is authorized in such capacity and on behalf of the Owner to exercise any legislative, executive, supervisory, or other similar functions in connection with the construction of the Project, shall be directly or indirectly interested personally in this Contract or in any part thereof, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the Project.

C. Owner is to mean NEW JERSEY MANUFACTURERS INSURANCE COMPANY.

D. Owner's authorized representative is to mean SPIEZLE ARCHITECTURAL GROUP, INC.

1.2 OWNER’S RIGHT TO CARRY OUT THE WORK:

A. If, in the opinion of the Architect, work to be corrected by the Owner is judged to be critical or time critical, the Architect, will inform the Owner and Contractor of the crucial nature of the work. Upon notification, the seven day periods noted in the contract documents will each be reduced to three days.

1.3 INSPECTION, CONDEMNATION AND REJECTION OF WORK AND MATERIALS:

A. The Owner reserves the right to inspect all goods and services provided or performed on the Project and condemn any goods or services which in its judgment do not conform to the specifications of the contract therefore.

CONTRACTOR

2.1 GENERAL:

A. Whenever the term "Contractor" is used in these Documents, it shall mean the Contractor with whom a Contract had been entered into for any of the various Contracts, unless noted otherwise.

2.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR:

A. If any errors, inconsistencies or omissions appear in the Drawings, Specifications, or other Contract Documents, which should reasonably have been discovered and concerning which interpretation had not been obtained during the Invitation for Proposals Period, the Contractor shall within ten (10) days after receiving written “Notice to Proceed” notify the Architect in writing of such error, inconsistency or omission. In the event the Contractor fails to give such notice, he will be responsible for the results of any such errors, inconsistencies or omissions and the cost of rectifying same. At the end of the ten (10) day period, Interpretations of this procedure shall be made by the Architect and his decision will be final.

B. Dimensions given at full-size or large-scale details shall take precedence over smaller scaled measurements. Discrepancies shall be referred to the Architect in writing for adjustments before any work affected thereby has been performed.

C. Where compliance with 2 or more industry standards or sets of requirements is indicated on drawings or specified, and overlapping of those different standards or requirements establishes different or conflicting minimums or levels of quality, the most stringent requirement (which is generally recognized to be the most costly) is intended and will be enforced. Refer apparently-equal-but-different requirements, and uncertainties as to which level of quality is more stringent, to Architect/Engineer in writing for a decision before proceeding. These may be shown on any plan, partial plan, in the Project Manual or in any Addenda. Information not shown on the drawings but included in the specifications, and vice versa, is included and required in the base bid Contract and shall be furnished and installed by the Contractor at no additional cost.

D. The general character of the detail work is indicated on drawings and in specifications. The term “similar” shall be used on the drawings in its general sense and not as meaning identical, and all details shall be worked out in relation to their location and their connection to other parts of the work. Where on any drawings a portion of the work is drawn out and the remainder is indicated in outline, the parts drawn out shall apply also to other like portions of the work. When a detail is indicated by starting only, such detail shall be continued throughout the courses or parts in which it occurs and shall also apply to all other similar parts in the work unless otherwise indicated. In case of differences between small and large scale drawings, the larger scale drawings shall take precedence. Any discrepancies shall be referred to the Architect for adjustment before any work affected thereby has been performed.

E. Since Contractor was afforded the opportunity to visit the Project Site, Contractor shall be held responsible for cognizance and knowledge of existing features and conditions ascertainable by such site visit, and costs of the Work associated therewith.

2.3 SUPERVISION AND CONSTRUCTION PROCEDURES:

A. All personnel or agents of the Contractor shall observe all rules and regulations in effect at the Owner's premises. Employees, agents and Subcontractors of the Contractor, while on the Owner's property, shall be subject to the control of the Owner, but under no circumstances shall such persons be deemed to be employees or agents of the Owner. The Contractor's personnel are required on a daily basis to report and sign in, at a location to be determined by the Owner, each time they report for service and sign out when leaving the premises. Nothing herein shall limit the Contractor's duty to provide onsite safety and to secure the site.

B. Contractor's personnel are not to engage with any activities with the staff or other Owner's employees unless duly authorized to do so in writing by the Owner's Representative. All contracted personnel are required to wear identification badges identifying the individual and the firm for which they are employed. Contractors shall assume full responsibility for the actions of all personnel in their employ. Contractors shall maintain proper supervision of the work in progress at all times.

C. All personnel and agents used by the Contractor for the performance of its work shall be properly trained and qualified for the type of work being performed and shall have the minimum ability and experience for its classification. The Owner reserves the right to reasonably refuse to accept services from any personnel. The Contractor shall provide evidence of qualifications for any personnel performing work under its contract upon request.

D. The Owner reserves the right to direct the removal from the site of any person, equipment and or entity which displays inappropriate behavior, including but not limited to, smoking, alcohol consumption, drugs, fighting, intimidating behavior, vandalism, theft, improper storage, improper or illegal acts, unfit persons etc.

E. Owner has the sole right to modify any and all security requirements at the Project Site.

F. The Contractor shall provide full time supervision at the project site when any work or activities are occurring, whether that of the general contractor or subcontractors.

2.4 LABOR AND MATERIALS:

A. Insofar as practical or required to obtain a full warranty, except as otherwise specified or shown, the material or product of one Manufacturer shall be used throughout the work for each specified purpose.

B. All manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in strict accordance with the Manufacturer's written instructions. Should such directions conflict with the Specifications, the Contractor shall request (in writing) clarification from the Architect before proceeding.

C. All workmanship, equipment, materials, and articles incorporated in the work are to be of the best grade of their respective kinds for the purpose. Where equipment, materials or articles are referred to in the Specification as "equal to" any particular standard, the Architect shall decide the question of equality. Contractor shall immediately furnish to the Architect for its approval the name of the Manufacturer of machinery, mechanical and other equipment which he contemplates installing, together with their respective performance capacities and other pertinent information to avoid delays. When required, Contractor shall furnish, for the Architect's approval, full information concerning materials, or articles which he contemplates incorporating in the work. Samples of materials shall be submitted for approval when and as directed. Machinery, equipment, materials and articles installed or used without such written approval shall be at the risk of subsequent rejection.

D. No previous inspection or certificate of payment shall be held as an acceptance of defective work or materials or to relieve Contractor from the obligation to furnish sound materials and to perform good satisfactory work. The Architect shall be the sole judge of the work furnished.

E. If the Architect deems it inexpedient to correct defective work not otherwise performed or completed in strict accordance with the Contract Documents, the difference in value between such work and that of the work, materials and conditions as specified, together with a fair allowance for damage shall be deducted from the Contract price.

2.5 PERMITS, FEES AND NOTICES:

A. The Owner will be responsible for obtaining all permits from the local Building Official and Municipality. The Owner shall pay for permit fees.

2.6 CONTRACTOR'S CONSTRUCTION SCHEDULE:

A. In the absence of a signed change order approving an extension of time, all Contractor Construction Schedule updates must show substantial completion date consistent with the date required in the contract between the Owner and Contractor and/or these Supplementary Conditions. Changes in logistics or duration shall not be made, except for good cause, and shall not result in an extension of the time for substantial completion. In the event certain aspects of the work fall behind the Contractor’s Construction Schedule, the Contractor shall develop a recovery plan to revise logistics, add manpower resources to reduce durations, expedite procurement or advance start of activities, to get the project back on a schedule that will assure completion in accordance with the substantial completion date which shall be agreed upon and approved by the Architect.

2.7 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES:

A. Submittals that require coordination with other products and other trades, such as, doors, frames, entrances, hardware, security programs, alarms, etc. shall be submitted together as a coordinated package or they will not be reviewed by the Architect. Coordination of all items is the responsibility of the Contractor. Contractor will replace non-compatible components to the Architect’s satisfaction at no additional cost.

B. Reference to procedures concerning Submittals shall be construed to incorporate all submittals including Contractor's Submittal Schedule of all products (to be received by the Architect within 30 days of Notice to Proceed), Manufacturer's published literature, shop drawings, samples, concrete mix, design and other data. Each submittal is required to be accompanied by a fully completed submittal cover sheet, Section 009000 – Project Forms, Form 009310 – Submittal Cover Sheet, included in the Project Manual.

C. Submittals, shop drawings and other data shall be submitted digitally in pdf format. Material samples and items requiring color selection will require physical samples to be submitted to the owner for review and final selection, with a digital copy issued to the architect for record.

D. Material Safety Data Sheets (MSDS): Submit Material Safety Data Sheets directly to the Owner; do not submit to the Architect/Engineer unless otherwise indicated. Architect/Engineer will not review submittals that include MSDS and will return entire submittal for resubmission.

E. Architect's review is for general conformance with the Design Concept and Contract Documents. Markings or comments shall not be construed as relieving the Contractor from compliance with all requirements of the Project Manual, Drawings, and Addenda. No departures there from, are to be considered as authorizing extra work or relieving the Contractor of work required within the contract. The Contractor remains responsible for materials, dimensions, details and accuracy for confirming and correlating all quantities and dimensions, and warranty/guarantee requirements and other conditions of the contract, etc. for selecting fabrication process and techniques of assembly, for performing this work in a safe and satisfactory manner, and of coordinating this work with that of all other trades.

F. When brand, make, quality, etc., is not specified definitely, Contractor shall submit written documentation to the Architect for the particular kind of brand which he desires to use, altering or substituting others if not satisfactory.

2.8 USE OF SITE:

A. The Contractor shall use the site in a manner that will cause minimum interference and maximum safety to the occupants of the building and the general public. The Contractor must have prior approval of the Architect and Owner for locations of stored materials, access trailer locations, etc.

B. In addition to site utilization limitations and requirements shown on Drawings and indicated by other Contract Documents, The Contractor shall administer allocation of available space within Construction area shown equitably among other entities needing access and space, to produce best overall efficiency in performance of total work of Project. The Contractor shall schedule deliveries to minimize time and space requirements for storage of materials and equipment on site.

2.9 REDESIGN

A. If the Contractor makes, or causes to be made, due to approval of substitute equipment or otherwise, any substantial change in the form, type, system and details of construction from those shown on the Drawings including, submission of approved shop drawings where changes to the original design were not brought to the Architect's attention in writing at the time of submission, it shall pay for all costs arising from such changes. The Contractor shall pay all Architectural and Engineering fees required to check the adequacy of such changes. Any changes or departures from the construction and details shown shall be made only after written approval from the Architect.

ADMINISTRATION OF THE CONTRACT

3.1 ARCHITECT'S ADMINISTRATION OF THE CONTRACT

A. The Contractor is required to have a representative available at all times to answer the telephone between the hours of 8:00 A.M. and 5:00 P.M. If business phones cannot be answered in person during these hours, the President of the Company or Corporation shall provide the Architect with his home phone number and cellular phone number. Failure of the Contractor to comply with this requirement will be cause for rejection of the Contractor's Application and Certificate for Payment.

B. No substitutions shall be allowed following the submission of the bid. Contractor shall provide the specified items unless otherwise approved via formal notice form the Owner and/or Architect during the bidding phase.

C. The acceptance of any material or method shall be understood as an acceptance only insofar as conforming to Specification requirements, and not as an absolute acceptance without respect to the requirements of the Specifications.

3.2 CLAIMS AND DISPUTES:

A. No adjustment in Contract Time or Contract Sum shall be permitted, however, in connection with a concealed or unknown condition that does not differ materially from those conditions disclosed or that reasonably should have been disclosed by the Contractor's (i) prior inspections, tests, reviews, and pre-construction services for the Project, or (ii) inspections, tests, reviews, and pre-construction services that the Contractor had the opportunity to make or should have performed in connection with the Project.

3.3 RESOLUTION OF CLAIMS AND DISPUTES

A. The Architect will recommend approval or rejection of Claims by written decision, which shall state the reasons therefore and which shall, if the Claim is recommended for approval, notify the parties of any change in the Contract Sum or Contract Time or both.

CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

4.1 MUTUAL RESPONSIBILITY:

A. Should the Contractor cause damage to the work or property of any other Contractor on the project, the Contractor shall, upon due notice, promptly settle with such other Contractor by agreement or otherwise resolve the dispute. If such other Contractor sues or institutes arbitration proceedings against the Owner on account of any damage alleged to have been sustained, the Contractor shall indemnify and hold harmless the Owner and defend such proceeding at its own expense, and if any judgment against the Owner arises therefrom, the responsible Contractor shall pay or satisfy it and shall reimburse the Owner for any Architect's, Engineer's and Attorney's fees and Court costs incurred.

B. The Contractor shall be responsible for proceeding with work in a manner that will not void any and all guarantees and warranties held by the Owner on the existing systems and facility. The Contractor shall include in its Bid sufficient cost to hire a representative of the Manufacturer or Contractor covering a warranty or guaranty on existing materials to advise on, and oversee work being done that affects these warranties and guaranties so as not to void existing warranties and/or guaranties. The Contractor shall comply with the Manufacturer's/Contractor's representative's requirements to maintain guaranties and warranties intact.

TIME

5.1 PROGRESS AND COMPLETION

A. The Contractor shall furnish such manpower, materials, facilities, and equipment and shall work such hours, including night shifts, overtime operations and Sundays and holidays, as may be necessary to insure the performance and completion of the Work in accordance with the approved and currently updated and approved Schedule. Should it become apparent from the current Schedule that the Work will not be completed within the Contract Time; the Contractor agrees that he will, as necessary, take some or all of the following actions at no additional cost to the Owner to improve the progress of the Project.

B. Increase manpower in such quantities and crafts as will substantially eliminate, in the judgment of the Architect, the backlog of Work;

C. Increase the number of working hours per shift, shifts per working day, working days per week, the amount of equipment, or any combination of the foregoing, sufficiently to substantially eliminate, in the judgment of the Architect, the backlog of Work; and,

D. Reschedule activities to achieve maximum practical concurrence of accomplishment of activities.

E. The Architect may require the Contractor to suggest revisions to the Schedule in writing demonstrating his program and proposed plan to make up the delay to ensure completion of the Work within the Contract Time. If the Architect finds the proposed plan not acceptable, the Architect may require the Contractor to take any of the actions set forth in this Article without additional cost to the Owner to make up the lag in scheduled progress.

F. Should the Contractor fail to achieve Substantial Completion in accordance with the date established in the Contract Documents, the Contractor shall reimburse the Owner for all professional fees plus expenses incurred by the Owner for additional services required of the Architect, Engineer and Owner's Attorney resulting from the failed performance by the Contractor to meet the Contract Substantial Completion Date.

END SECTION 007300

SECTION 009000 – PROJECT FORMS

Project Forms included in this section are provided for Contractor's use when forwarding Requests for Information, Job Meeting Reports, Substitution Submittals, and request when Ready for Closeout form. Contractors shall use these forms exclusively. Contractors' personal forms are not acceptable.

END OF SECTION 009000

REQUEST FOR INFORMATION

RFI # _____ **CONTRACT NO. _____**

Information Needed: Date Needed:

Requested By/Company: _____ Date: _____

Response:

Response Prepared By: _____ Date: _____

JOB MEETING REPORT

Project:		
Contractor:		
Job Meeting Report No.	Date:	Comm. No.
Contract No./Work		Page:

Work Accomplished Previous Period:

Work Scheduled Next Period:

Briefly State Main Points You Wish to Make a Matter of Record:

Signed: _____

SUBMITTAL COVER SHEET

The following information is required and shall accompany all project submittals. Submittals received without this cover sheet shall be deemed incomplete and will not be reviewed.

DATE:	
SUBMITTING CONTRACTOR:	
SUBCONTRACTOR / MANUFACTURER / VENDOR:	
ITEM(S) SUBMITTED:	
SPECIFICATION SECTION:	
SUBMITTAL NUMBER:	

YES	NO	
		Is submitted item in accordance with Contract Requirements?
		Is submittal a substitution?
		If yes, is submittal matrix with supporting documentation included?
		Is submittal complete?
		Does submittal meet Specified Standards?
		Does submittal meet all code requirements?

COMMENTS:

Submitted by:

_____	_____	_____
Signature	Company	Date

READY FOR CLOSEOUT

Contractor shall submit a copy of this document with the completed punchlist, signed and sealed by the Contractor's authorized representative and Notarized, to the Architect indicating that the Work has been completed as required in accordance with the Contract Documents and after which the Contractor shall notify the Architect when re-inspection is requested.

The undersigned certifies that all items of work noted herein and all other required scope of Work have been completed in accordance with Contract Documents and is further certifying that the project is ready for final inspection by the Architect. The undersigned acknowledges providing all required close-out documents, including, but not limited to, all affidavits, warranties and a release of liens, to the Architect.

Items not completed shall be summarized by the Contractor in letter form and attached herewith.

The undersigned hereby certifies that he/she shall pay the Owner for any and all expenses incurred by the Architect due to the Contractor's misrepresentation of completion of punch list items.

Authorized Representative of the Contractor (Print/Type)

Title

Signature Date

THE CONTRACTOR SHALL SEAL THIS PUNCHLIST AS NOTED BELOW:

_____ _____

Contractor's Corporate Seal Notary Seal

Prepared by: _____ Date: _____

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 00 and 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The project includes work at the West Trenton Campus of the New Jersey Manufacturers Insurance Company. The Owner will secure permits from the Township of Ewing Building Department.

B. The Work shall include, but not be limited to:

1. Interior Renovations of an existing office suite located in the Link Building at NJM West Trenton Campus to create a new office suite. The area of renovation is approximately 3,650 square feet;

    a. Demolition of existing floor, wall and ceiling finishes; interior partitions, lighting, HVAC distribution, power and data, plumbing fixtures, and other accessories indicated or required to accomplish the indicated work.
    b. New framed interior partitions
    c. Flooring
    d. Painting
    e. Ceilings
    f. Doors, hardware and access control
    g. Interior Glazing and Windows
    h. Window treatments
    i. Casework
    j. Cubicle curtains and track
    k. Lighting
    l. Power and data
    m. HVAC ductwork, grilles, registers and diffusers
    n. Plumbing
    o. Fire alarm system medication
    p. Fire protection system modification

C. This Section includes the following:

1. Work covered by the Contract Documents.
2. Type of the Contract.
3. Work phases.

4. Work under other contracts.
5. Use of premises.
6. Owner's occupancy requirements.
7. Work restrictions.
8. Specification formats and conventions.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification:

INTERIOR ALTERATIONS AT THE
FIRST FLOOR LINK BUILDING
WEST TRENTON CAMPUS
NJM PROJECT NO.: WT.O.2020.001
ARCHITECT'S COMMISSION NO. 20C009

B. Owner:

NEW JERSEY MANUNFACTURERS INSURANCE COMPANY
WEST TRENTON CAMPUS
301 SULLIVAN WAY
WEST TRENTON, NEW JERSEY 08628

1. Owner's Representative:

Mr. John Rzepka
Project Manager, Facilities Operations
NEW JERSEY MANUFACTURERS INSURANCE COMPANY
WEST TRENTON CAMPUS
301 SULLIVAN WAY
WEST TRENTON, NEW JERSEY 08628

C. Architect:

SPIEZLE ARCHITECTURAL GROUP, Inc.
1395 Yardville-Hamilton Square Road
Hamilton, New Jersey, 08691

1.4 TYPE OF CONTRACT

A. Project will be constructed under a single prime Contract.

1.5 WORK PHASES

A. Project Substantial Completion: Work will commence within Ten (10) Calendar Days after receipt of written "Notice to Proceed" and be substantially completed in accordance with the Contract Documents and Contractor's Construction Schedule for **Substantial Completion** of the entire project **within 120 Calendar days of the issuance of the Notice to Proceed**. All time limits stated in the Contract are of the essence.

B. The Project Area will be available to the Contractor to begin work immediately upon the award of the Project.

C. The campus, site and buildings will be open and operational throughout the duration of this contract. Contractor shall have access to the work area during normal working hours but will be responsible to coordinate with the Owner's operations and security / access protocols. Noisy or potentially disruptive work shall be coordinated with Owner in advance. The Work area must remain protected and safe.

D. Note: the Contractor is strongly encouraged to expedite submittals and ordering of products and long-lead items well in advance of mobilizing to the project site.

E. The Contractor is encouraged to perform disruptive work after hours or on weekends.

F. The Contractor must notify the Owner seven (7) days in advance of any crane/lifting activities, and no lifting activities can occur while the building is occupied.

1.6 WORK BY OWNER

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

B. Subsequent Work: Owner will perform the following additional work at site after Substantial Completion. Completion of that work will depend on successful completion of preparatory work under this Contract.

1. Installation of technology and visual display boards.
2. Installation of loose furniture.
3. Card readers and access controls.

1.7 WORK UNDER SEPARATE CONTRACTS

A. General: There is no work currently planned to be provided under separate contract. All work indicated is the responsibility of the General Contractor. In the event that the owner does separately contract for work to be performed, cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.

1.8 OWNER-FURNISHED PRODUCTS

A. Owner will furnish products indicated. The Work includes receiving, unloading, handling, storing, protecting, and installing Owner-furnished products and making building service connections where applicable.

1. Owner will arrange for and deliver Shop Drawings, Product Data, and Samples to Contractor.
2. Owner will arrange and pay for delivery of Owner-furnished items according to Contractor's Construction Schedule.
3. After delivery, Owner will inspect delivered items for damage. Contractor shall be present for and assist in Owner's inspection.
4. If Owner-furnished items are damaged, defective, or missing, Owner will arrange for replacement.
5. Owner will arrange for manufacturer's field services and for delivery of manufacturer's warranties to Contractor.
6. Owner will furnish Contractor the earliest possible delivery date for Owner-furnished products. Using Owner-furnished earliest possible delivery dates, Contractor shall designate delivery dates of Owner-furnished items in Contractor's Construction Schedule.
7. Contractor shall review Shop Drawings, Product Data, and Samples and return them to Architect noting discrepancies or anticipated problems in use of product.
8. Contractor is responsible for receiving, unloading, and handling Owner-furnished items at Project site.
9. Contractor is responsible for protecting Owner-furnished items from damage during storage and handling, including damage from exposure to the elements.
10. If Owner-furnished items are damaged as a result of Contractor's operations, Contractor shall repair or replace them.
11. Contractor shall install and otherwise incorporate Owner-furnished items into the Work.

1.9 ACCESS TO SITE

A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

1. Prior to commencing work on site, the Contractor shall meet with the Architect, and Owner to review work to be completed, determine its impact on occupied areas and adjacent properties, etc. to distribute necessary guidelines.
2. Designated areas will be established, as necessary, for parking, toilet facilities, special trailers and deliveries, etc.
3. The Contractor and its Employees and its subcontractors are authorized to be on grounds only during the performance of work related to the project.
4. Obey speed limits as posted, or if not posted, not to exceed 10 mph on grounds. Yield to all pedestrian traffic.
5. Vehicles and operating equipment shall be turned off, locked and secure whenever not in use. All tools and equipment, not removed from the site on a daily basis, shall be secured and kept in the work staging area at the end of the work day. The owner will not assume responsibility for any missing articles.
6. Do not fraternize with owner’s employees or building occupants while working on site.

7. Facility occupants and employees are not allowed in work areas. Active work areas shall be secured and/or enclosed at all times to prevent occupants and employees from wandering inside.
8. Safety shall be maintained by the Contractor at the job site at all times.
9. Possession and/or consumption of alcoholic beverages or drugs are strictly prohibited on site at all times.
10. Smoking is prohibited inside and outside the building. No smoking on campus.
11. Contractor shall coordinate with additional contractor(s) on site to schedule operations requiring lifts or other equipment for use in demolition operations or installations of new work. Access is to be scheduled in such a way as not to cause a delay or interruption to either party in the course of their work or fulfillment of the contract.

B. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Limits: Confine construction operations to area(s) as indicated on the drawings or established by approval from the Owner so as not to interfere with facility hours of operations.
2. Owner Occupancy: Allow for Owner occupancy of the Project site.
3. Driveways, Walkways and Entrances: Keep driveways, parking garages, 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.
    b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
    c. Contractor is not permitted to use any parking spaces designated for Owner’s staff or visitors. Contractor shall review available on-site parking locations prior to submitting his bid.

C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Maintain heating, ventilation and air conditioning levels in Owner occupied areas of the building throughout the construction period. Repair damage caused by construction operations.

D. The Contractor shall comply with the Owner’s Site Security Programs as administered by the Owner including Contractor badging. Each employee of the Contractor will be supplied a badge by the Owner, which will be distributed to them by the Owner. Each employee must have a State issued picture ID in order to be assigned a badge. This badge must be worn at all times while on the construction site. No Contractor will be allowed access to the existing building without a badge and prior approval from the Owner.

E. Maintain existing electrical service throughout construction period. Repair damage caused by construction operations. Protect property and persons in the project area during construction period.

F. Removal of non-fixed, movable items will be completed by the Owner prior to the start of construction. Fixed or built-in items shall be removed and/or salvaged, and relocated, by the General Contractor and disconnects by appropriate trades as indicated and/or directed and as required to perform the work.

G. All Personnel shall dress in clothing appropriate to the work they perform. All personnel are to wear shirts, hardhats, safety shoes, glasses, gloves, masks or respirators, noise protection devices, and other protective clothing and equipment as required by OSHA standards.

1.10 OWNER'S OCCUPANCY REQUIREMENTS

A. Full Owner Occupancy: Owner will occupy and use the building during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits, unless otherwise indicated.

1. Maintain access to existing walkways and other adjacent occupied or used facilities. Do not close or obstruct walkways, driveways or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
2. Provide not less than seven (7) days' notice to Owner of activities that will affect Owner's operations. Owner reserves the right to stop the work if it interferes with owner's scheduled occupied activities critical to the owner's operations.

1.11 WORK RESTRICTIONS

A. On-Site Work Hours: Limit work in the building and on the site to normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, unless otherwise indicated.

1. All personnel shall dress in clothing appropriate to the work they perform. All personnel are to wear shirts, hardhats, safety shoes, glasses, gloves, masks or respirators, noise protection devices, and other protective clothing and equipment as required by OSHA standards.
2. The Contractor is responsible for maintaining all temporary emergency egress routes. The Contractor shall obtain approval from the Building, Police, Rescue and Fire Departments for all temporary emergency egress routes. The Contractor shall provide temporary exit signs as required to ensure clearly marked egress routes.
3. The Owner has the right to require disruptive work to be discontinued if affecting the Owner's employees.

B. 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 Architect and Owner not less than three (3) days in advance of proposed utility interruptions.
2. Obtain Owner's written permission before proceeding with utility interruptions.

C. 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 Architect and Owner not less than three (3) days in advance of proposed disruptive operations.
2. Obtain Owner's written permission before proceeding with disruptive operations.

1.12 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 50-division format and CSI/CSC's "MasterFormat" numbering system.

1. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.
2. Divisions 00 and 01: Sections in Divisions 00 and 01 govern the execution of the Work of all Sections in the Specifications.

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

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012500 - 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. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

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.

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. Refer to NJM Front End for additional Submittal Requirements.
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.
i. Research reports evidencing compliance with building code in effect for Project..
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.
l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

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.

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

    a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
    b. Substitution request is fully documented and properly submitted.
    c. Requested substitution will not adversely affect Contractor's construction schedule.
    d. Requested substitution has received necessary approvals of authorities having jurisdiction.
    e. Requested substitution is compatible with other portions of the Work.
    f. Requested substitution has been coordinated with other portions of the Work.
    g. Requested substitution provides specified warranty.
    h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

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.

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Proposal Requests issued by Architect are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
2. Within the time indicated on the Proposal Request, or if not indicated, not to exceed (10) ten days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Include costs of labor and supervision directly attributable to the change.
    c. Include delivery charges, equipment rentals, and amounts of trade discounts.
    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. Contractor must receive prior written approval from the Owner prior to performing the Work. Any Work completed without prior approval by the Owner will not be paid.

B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable 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.
6. Contractor must receive prior written approval from the Owner prior to performing the Work. Any Work completed without prior approval by the Owner will not be paid.

1.5 CHANGE ORDER PROCEDURES

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

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714 “Construction Change Directive”. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive. The Contractor shall be responsible to obtain verification by the Owner’s representative on a daily basis.

1. 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 012600

SECTION 012900 – PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

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. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:

    a. Application for Payment forms with Continuation Sheets.
    b. Submittals Schedule.
    c. Contractor's Construction Schedule.
    d. List of Subcontractors.
    e. List of Products.
    f. List of principal suppliers and fabricators.

2. Submit the Schedule of Values showing a complete breakdown of labor and materials of all components of the work, including that of the Subcontractors, to Architect within (21) twenty one days of the written Notice to Proceed and no later than (7) seven days before the date scheduled for submittal of initial Applications for Payment. The Schedule of Values shall be subject to the satisfaction of the Owner and Architect including that of the Subcontractors listed on the “Contractor’s Subcontractor List” before the date scheduled for submittal of initial Applications for Payment.

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

1. Identification: Include the following Project identification on the Schedule of Values:

    a. Project name and location.
    b. Owner’s Bid Number.
    c. Name of Architect.
    d. Architect's project number.
    e. Contractor's name and address.
    f. Date of submittal.

2. Submit draft of AIA Document G703 Continuation Sheets.
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. Allowances.
    d. Change Orders (numbers) that affect value.
    e. Dollar value.

        1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate. Include separate line items under required principal subcontracts for operation and maintenance manuals, punch list activities, Project Record Documents, as built documents, closeout documents, and demonstration and training in the amount of (2) two percent of the Contract Sum.
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. 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 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: Refer to the NJM Front End.

C. Payment Application Forms: Use AIA Document G702 “Application and Certificate for Payment” and AIA Document G703 Continuation Sheets as form for Applications for Payment.

D. 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 approved Schedule of Values and Contractor's Construction Schedule. Use approved updated schedules if revisions were made.
2. Include amounts of approved Change Orders and Construction Change Directives issued before last day of construction period covered by application.

E. Transmittal: Submit (3) three signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours.

F. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of Values.
3. Contractor's Construction Schedule (preliminary if not final).
4. Products list.
5. Submittals Schedule (preliminary if not final).
6. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
7. Initial progress report.

G. Application for Payment at Substantial Completion: After issuing 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 claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.

2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
3. Administrative actions and submittals that shall proceed or coincide with this application includes, but is not limited to:
    a. Occupancy permits and similar approvals.
    b. Warranties, guarantees, and maintenance agreements.
    c. Test records.
    d. Maintenance instructions.
    e. Final cleaning.
    f. Application for reduction of retainage, and consent of surety.
    g. List of incomplete work, recognized as exceptions to Architect's Certificate of Substantial Completion.

H. Final Payment Application: 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. Evidence that claims have been settled.
3. Contractor's "As-Built" drawings.
4. Maintenance Manuals and Instructions.
5. Completed Punchlist signed and sealed by the Contractor's authorized representative and notarized.
6. Removal of temporary facilities and services.
7. Removal of surplus materials, rubbish and similar materials.
8. All attic stock materials have been delivered to the Owner.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. Field supervision.
2. Coordination.
3. Submittals.
4. Administrative and supervisory personnel.
5. Project meetings.
6. Requests for Information (RFI's).
7. Cleaning and protection.

B. The contractor and its Subcontractors shall participate in coordination requirements as described herein.

1.3 DEFINITIONS

A. RFI: Request from Contractor seeking information, interpretation or clarification of the Contract Documents.

1.4 FIELD SUPERVISION

A. The Contractor shall have a full time superintendent present on site to supervise its work and that of its Subcontractors. At no time shall the Contractor or its Subcontractors be working on the Project without the Contractor's superintendent present. The Contractor shall submit the name of its Superintendent to the Architect prior to commencement of work.

B. Field Supervisor shall be fluent in the English language to ensure full communications can be achieved during daily operations between Contractor, Architect, and Owner.

1.5 COORDINATION

A. Coordination: Contractor shall 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. The Contractor shall be responsible for being the supervisor, manager, overseer, coordinator and expediter of its Subcontractors. The Contractor shall have included in its bid a sufficient cost amount to furnish such administrative and supervisory duties.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.
4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work and activities is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

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

E. Inspection of Conditions: require the installer of each major component to inspect both the substrate and conditions under which work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

F. Manufacturer’s Instructions: comply with manufacturer’s installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.

G. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.

H. Provide attachment and connection devices and methods necessary for securing work. Secure work true to line and level. Allow for expansion.

I. Visual Effects: provide uniform joint widths in exposed work. Arrange joints in exposed work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.

J. Recheck measurements and dimensions, before starting each installation.

K. Install each component during weather conditions and project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.

L. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.

M. Mounting Heights: where mounting heights are not indicated, refer to the Architect for final decision.

1.6 SUBMITTALS

A. Coordination drawings will be prepared in a joint effort by each trade to avoid material and equipment installation interference as well as project delays. The coordination drawings will clearly indicate locations, dimensions, and elevations including, but not limited to, duct work, insulation, mechanical equipment, hot water supply and return piping, fire sprinkler work, electrical fixtures, electrical conduit, structural steel, beams, columns, joist, plumbing piping, plumbing equipment, ceiling grid, penetrations, lintels, etc. Additionally any trade requiring a penetration to be made in wall, floor and or roof shall identify the required opening size and location. The size and type of lintel required for the penetration is also required. Each trade is responsible for laying out their necessary wall, floor or roof penetration.

B. The Contractor will coordinate a meeting between each trade to finalize the coordination review. Upon the final review as to the accuracy of the coordination drawings, the Contractor's representative who has written authorization from the President of the Company or Corporation to approve and sign-off on the coordination drawings will sign and date the coordination drawings. The General Contractor will then submit copies of the signed and dated coordination drawing to the Architect for review. The signed coordination drawings shall be submitted to the Architect within (30) thirty calendar days from the date of Notice to Proceed. Contractor that fails to furnish completed coordination drawings within the time specified shall be financially responsible for removals, repairs, patching, etc. caused by failure to provide coordination drawings at the time needed in coordination with the Contractor's Construction Schedule.

C. As the work progresses, the Contractor shall familiarize itself with the work to be done by others in so far as it affects its work and shall promptly give such information to others as affects their mutual interests. The Contractor shall notify the Architect of any condition that might prevent the satisfactory completion of their work.

D. The Contractor shall carefully check job space requirements with all trades to make sure that the combined work can be installed in the allotted spaces, chases, etc., with all piping, conduits, ductwork, etc. concealed from view. Coordination drawings shall be the mutual responsibility of all Contractors and Subcontractors involved. Any Contractor or its Subcontractor not coordinating its work with others will be responsible for any additional costs arising from lack of coordination. In the case of conflict between Prime Contractors and subcontractors, the Architect will have the final decision in accordance with the General Conditions of the Contract for Construction. The Contractor that fails to supply the proper sizes and locations shall be financially responsible for consequential corrective work

E. Coordination Drawings: Organize coordination drawings as follows.

1. Content: Project-specific information, drawn accurately to scale. Do not base Coordination Drawings on reproductions of the Contract Documents or standard printed data. Include the following information, as applicable:

    a. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, electrical, fire suppression and security systems.
    b. Indicate required installation sequences.
    c. Indicate dimensions shown on the Contract Drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect for resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

2. Sheet Size: At least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 40 inches (750 by 1000 mm).
3. Number of Copies: Submit PDF copy of each submittal. The Architect will return the submittal in PDF format.
4. Refer to individual Sections for Coordination Drawing requirements for Work in those Sections.
5. Submittals shall include:

    a. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
    b. 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.
    c. Mechanical and Plumbing Work: Show the following:

        1) Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
        2) Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.

d. Electrical Work: Show the following:

1) Runs of vertical and horizontal conduit 1-1/4 inches (32 mm) in diameter and larger.
2) Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
3) Location of pull boxes and junction boxes, dimensioned from column center lines.

e. Fire-Protection System: Show the following:

1) Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.

F. Key Personnel Names: Within (10) ten 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 and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.7 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.

1. Include special personnel required for coordination of operations with other contractors.

1.8 PROJECT MEETINGS

A. Job Meetings shall be held at the Site, or elsewhere as designated by the Architect or Owner, for each project at least twice per month on a prescribed date and time of each month, or more often, as directed and required by the Architect or Owner.

B. It will be mandatory for the Contractor to be present at every Meeting, unless previously excused by the Architect.

C. General: Architect will Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.

1. Attendees: Architect will inform the Owner and Contractors whose presence is required, of date and time of each meeting. Contractor will inform its Subcontractors, suppliers, participants and others involved whose presence is required of scheduled meeting dates and times.

2. Minutes: Architect will record significant discussions and agreements achieved and distribute the meeting minutes to everyone concerned, including Owner, within (7) seven days of the meeting.

D. Pre-construction Conference

1. Architect shall schedule a Pre-construction Conference and Organizational Meeting at the Project Site or other convenient location no later than fifteen (15) days after execution of the Agreement and prior to commencement of construction activities. The meeting will establish responsibilities and personnel assignments.
2. Attendees: The Owner, the Architect, and their consultants; the Contractor and its superintendent; major subcontractors, manufacturers, suppliers and other concerned parties shall each be represented at the conference by persons familiar with and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect progress, including such topics as:

    a. Tentative construction schedule. Contractor shall bring a draft copy of a Schedule of Construction for review and coordination.
    b. Phasing.
    c. Critical work sequencing and long-lead items.
    d. Designation of key personnel and their duties.
    e. Procedures for processing field decisions and Change Orders.
    f. Procedures for RFIs.
    g. Procedures for testing and inspecting.
    h. Procedures for processing Applications for Payment.
    i. Distribution of the Contract Documents.
    j. Submittal procedures.
    k. Preparation of Record Documents.
    l. Use of the premises and existing buildings.
    m. Work restrictions.
    n. Owner's occupancy requirements.
    o. Sequence of work to ensure uninterrupted progress of the facility.
    p. Responsibility for temporary facilities and controls.
    q. Construction waste management and recycling.
    r. Parking availability.
    s. Office, work, and storage areas.
    t. Equipment deliveries and priorities.
    u. First aid.
    v. Security.
    w. Progress cleaning.
    x. Working hours.

4. Minutes: Architect will record and distribute meeting minutes.

E. Pre-installation Conferences: Conduct a pre-installation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect and Owner of scheduled meeting dates.
2. Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

    a. The Contract Documents.
    b. Options.
    c. Related RFIs.
    d. Related Change Orders.
    e. Purchases.
    f. Deliveries.
    g. Submittals.
    h. Review of mockups.
    i. Possible conflicts.
    j. Compatibility problems.
    k. Time schedules.
    l. Weather limitations.
    m. Manufacturer's written recommendations.
    n. Warranty requirements.
    o. Compatibility of materials.
    p. Acceptability of substrates.
    q. Temporary facilities and controls.
    r. Space and access limitations.
    s. Regulations of authorities having jurisdiction.
    t. Testing and inspecting requirements.
    u. Installation procedures.
    v. Coordination with other work.
    w. Required performance results.
    x. Protection of adjacent work.
    y. Protection of construction and personnel.

3. Installer shall record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Installer shall distribute minutes of the meeting to each party present and to parties who should have been present.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date

F. Job Meetings: The Architect or Construction Manager conduct progress meetings at the site or elsewhere as designated by the Architect or Construction Manager for each project at least twice per month on a prescribed date and time of each month, or more often, as directed and required by the Architect. Coordinate dates of meetings with preparation of payment requests.

1. 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 conference shall be familiar with Project and authorized, by the president of the company or corporation, to conclude matters relating to the Work.

2. 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.
        2) Briefly state points to make a matter of record.

    b. Review present and future needs of each entity present, including the following:

        1) Interface requirements.
        2) Sequence of operations.
        3) Status of submittals.
        4) Deliveries.
        5) Off-site fabrication.
        6) Access.
        7) Site utilization.
        8) Temporary facilities and controls.
        9) Work hours.
        10) Hazards and risks.
        11) Progress cleaning.
        12) Quality and work standards.
        13) Status of correction of deficient items.
        14) Field observations.
        15) RFIs.
        16) Status of proposal requests.
        17) Pending changes.
        18) Status of Change Orders.
        19) Pending claims and disputes.
        20) Documentation of information for payment requests.

3. Minutes: Architect will record.
4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.

    a. Schedule Updating: The Contractor will revise Contractor's Construction Schedule at least once per month after each job meeting where revisions to the schedule have been made or recognized and when requested by the Architect. Issue revised schedule concurrently with the report of each meeting or within 4 days of Architect’s request.

G. Coordination Meetings: The Contractor shall conduct Project Coordination Meetings as necessary for the performance of the work. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and pre-installation conferences.

1. Attendees: In addition to representatives of Owner, 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 conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. 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. The Schedule will be reviewed at each regularly scheduled job meeting or when specifically requested by the Architect.
    c. Review present and future needs of each contractor present, including the following:

        1) Interface requirements.
        2) Sequence of operations.
        3) Status of submittals.
        4) Deliveries.
        5) Off-site fabrication.
        6) Access.
        7) Site utilization.
        8) Temporary facilities and controls.
        9) Work hours.
        10) Hazards and risks.
        11) Progress cleaning.
        12) Quality and work standards.
        13) Change Orders.
        14) Review and establishing needed coordination drawings

3. Reporting: Contractor shall record meeting results and distribute copies to everyone in attendance, Architect, Owner, and to others affected by decisions or actions resulting from each meeting.

1.9 REQUESTS FOR INFORMATION (RFIs)

A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request information at Project meeting, prepare and submit an RFI in the form specified included in Section 009000.

1. RFIs shall originate with the Contractor. RFIs submitted by entities other than Contractor will be returned 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.
3. If the Architect must prepare “responses to Contractor’s Requests for Information” (RFI’s) where such information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor-prepared coordination drawings, or Project correspondence or documentation the Owner will back-charge the Contractor for all costs associated with the additional Contract Administration Services provided by the Architect.

B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:

1. Project name.
2. Date.
3. Name of Contractor.
4. Name of Architect.
5. RFI number, numbered sequentially.
6. Specification Section number and title and related paragraphs, as appropriate.
7. Drawing number and detail references, as appropriate.
8. Field dimensions and conditions, as appropriate.
9. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
10. Contractor's signature.
11. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.

    a. Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.

C. Hard-Copy RFIs: in the form specified included in Section 009000.

1. Identify each page of attachments with the RFI number and sequential page number.

D. Software-Generated RFIs: Software-generated form with the same content as indicated above.

1. Attachments shall be electronic files in Adobe Acrobat PDF format.

E. Architect's Action: Architect will review each RFI, determine action required, and return it. Allow (7) seven calendar days for Architect's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.

1. The following RFIs will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for coordination information already indicated in the Contract Documents.
    d. Requests for adjustments in the Contract Time or the Contract Sum.
    e. Requests for interpretation of Architect's actions on submittals.
    f. Incomplete RFIs or RFIs with numerous errors.

2. Architect's action may include a request for additional information, in which case Architect's time for response will start again.
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 Contract Modification Procedures.

    a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within (10) ten days of receipt of the RFI response.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within (7) seven days if Contractor disagrees with response.

G. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number prepared using Microsoft Excel or approved equal. Submit log at least monthly, at each job meeting or when specifically requested by the Architect. Include the following:

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number including RFIs that were dropped and not submitted.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect's response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

1.10 PROTECTION OF PERSONS AND PROPERTY

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

B. The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury or loss to:

1. All employees on the Work and all other persons who may be affected thereby.

2. All the Work and all materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor of any of his Subcontractors of Sub-subcontractors.
3. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation or replacement in the course of the Work.

C. The Contractor shall comply with all applicable laws, ordinances, rules, regulations and lawful orders of any public authority having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss. He shall erect and maintain as required by existing conditions and progress of the Work, all reasonable safeguards for safety and protection, including posting danger signs and other warning against hazards, promulgating safety regulations and notifying Owners and users of adjacent utilities.

D. All damage or loss to any property referred to herein caused in whole or in part by the Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them as be liable, shall be remedied by the Contractor.

E. The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's Superintendent, unless otherwise designated in writing by the Contractor to the Owner.

F. The Contractor will provide NJM their safety handbook for coordination. The Contractor shall comply in all respects with the State Construction Safety Code and with applicable federal regulations, and shall see that all Subcontractors comply with the codes and regulations wherever and whenever they are applicable.

G. The Contractor is specifically directed to comply with Section 7 of the Construction Safety Code which requires among other things, first aid kits to be available and the name of the nearest physician and ambulance service to be posted.

H. The Contractor shall refer to NJM Safety Requirements throughout the duration of the project.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Contractor's Construction Schedule.
2. Submittals Schedule.
3. Daily construction reports.
4. Material location reports.
5. Field condition reports.
6. Special reports.

1.3 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.

1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. Milestone: A key or critical point in time for reference or measurement.

1.4 SUBMITTALS

A. Contractor's Construction Schedule: Submit (3) three copies of initial schedule, large enough to show entire schedule for entire construction period.

1. Qualification Data: For scheduling manager.

B. Submittals Schedule: Submit (3) three copies of schedule. Arrange the following information in a tabular format:

1. Scheduled date for first submittal.
2. Specification Section number and title.
3. Submittal category (action or informational).
4. Name of subcontractor.
5. Description of the Work covered.
6. Schedule dates for purchasing.
7. Schedule dates for installation.
8. Activity or event number.

C. Scheduled date for Architect's and Owner final release or approval.

D. Special Reports: Submit at weekly intervals**.**

1.5 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from parties involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, re-submittal, ordering, manufacturing, fabrication, delivery and installation when establishing dates.

1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
2. Initial Submittal Schedule: Submit concurrently with preliminary bar-chart schedule. Include submittals required during the first 60 sixty days of construction. List those required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for Notice to Proceed to date of Substantial and Final Completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than (10) ten calendar days, unless specifically allowed by Architect.
2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than (60) sixty days, as separate activities in schedule.
3. Submittal Review Time: Include review and re-submittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
4. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion and for Township inspections and issuance of a TCO or CO.

C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

D. Milestones: Include any milestones in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.

E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.

2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor shall, within (15) fifteen calendar days after issuance of a Notice to Proceed, submit a draft Contractor’s Construction Schedule to the Architect and Owner.

2.4 REPORTS

A. Daily Construction Reports: Contractor shall prepare a daily construction report recording the following information concerning events at Project site: Failure to comply is cause for docking payment.

1. List of subcontractors at Project site.
2. Approximate count of personnel at Project site.

3. Equipment at Project site.
4. Material deliveries.
5. Accidents.
6. Meetings and significant decisions.
7. Unusual events (refer to special reports).
8. Stoppages, delays, shortages, and losses.
9. Emergency procedures.
10. Orders and requests of authorities having jurisdiction.
11. Change Orders received and implemented.
12. Construction Change Directives received and implemented.
13. Services connected and disconnected.
14. Equipment or system tests and startups.
15. Partial Completions and occupancies.
16. Substantial Completions authorized.

B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a request for information in Section 009000 Project Forms, Form 009215 Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.5 SPECIAL REPORTS

A. General: Submit special reports directly to Owner within weekly of an occurrence. Distribute copies of report to parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At least every 30 calendar days or as often as deemed necessary by the Architect, update schedule to reflect actual construction progress and activities and to recommend changes in the sequencing and scheduling. Issue schedule (1) one week before each regularly scheduled progress meeting. Upon 7 working days of the Architect’s request, submit an updated schedule to the Architect.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.

2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate Actual Completion percentage for each activity.

B. The updated Contractors' Construction Schedule will be reviewed at each Job Meeting. Contractor is required to have a representative present at the Job Meeting with authorization to review, agree upon and sign-off on any approved and agreed upon changes to the updated Contractors' Construction Schedule. In addition, withholding of payments to the Contractor may occur for failure of the Project to be completed within the designated time.

C. In the absence of a signed change order approving an extension of time, all Contractor Construction Schedule updates must show substantial completion date(s) consistent with the date(s) required in Section 011000 – Summary. Changes in logistics or duration shall not be made, except for good cause, and shall not result in an extension of the time for substantial completion. In the event certain aspects of the work fall behind the Contractor's Construction Schedule, the Contractor(s) responsible shall, in coordination, and consultation with all other Contractors, will develop a recovery plan to revise logistics, add manpower resources to reduce durations, expedite procurement or advance start of activities, to get the project back on a schedule that will assure completion in accordance with the substantial completion date.

D. Distribution: Distribute copies of approved schedule to Architect Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and/or temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 013200

SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

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. Preconstruction photographs.
2. Periodic construction photographs.
3. Final completion construction photographs.

B. Related Requirements:

1. Section 013300 "Submittal Procedures" for submitting photographic documentation.
2. Section 017700 "Closeout Procedures" for submitting photographic documentation as project record documents at Project closeout.
3. Section 024119 "Selective Demolition" for photographic documentation before selective demolition operations commence.

1.3 INFORMATIONAL SUBMITTALS

A. Digital Photographs:

1. Digital Camera: Minimum sensor resolution of 8 megapixels.
2. Format: Minimum resolution of 3200 by 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

A. Digital Images: Provide images in JPG format, produced by a digital camera.

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.

B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

1. Date and Time: Include date and time in file name for each image.

C. Preconstruction Photographs: Before commencement of the installation of temporary facilities and demolition, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points.

1. Flag construction limits before taking construction photographs.
2. Take a sufficient number of photographs of existing building to accurately record physical conditions at start of construction.

D. Periodic Construction Photographs: Take photographs at regular intervals throughout construction to document regular progress and major milestones.

E. Submit periodic construction photographs with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

F. Additional Photographs: Architect may request photographs in addition to periodic photographs specified.

1. In emergency situations, take additional photographs within 24 hours of request.
2. Circumstances that could require additional photographs include, but are not limited to, the following:

a. Special events planned at Project site.
b. Immediate follow-up when on-site events result in construction damage or losses.
c. Photographs to be taken at fabrication locations away from Project site.
d. Substantial Completion of a major phase or component of the Work.
e. Extra record photographs at time of final acceptance.
f. Owner's request for special publicity photographs.

END OF SECTION 013233

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other Submittals.

B. Administrative Submittals: Refer to other Division 01 Sections, other Specification Sections and Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:

1. Applications for Payment.
2. Performance and Payment Bonds.
3. Insurance Certificates.
4. List of Subcontractors, suppliers, manufacturers, installers.
5. Schedule of Values.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Architect's responsive action.

B. Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

A. General: Electronic copies of CAD Drawings of the Contract Drawings may be conditionally available from the Architect for Contractor's use in preparing Submittals by a jointly signed indemnity agreement.

1. Contractor and each subcontractor will be required to sign an Indemnification and Hold Harmless Agreement in form provided by the Architect for the use of original electronic information created by the Architect.
2. Electronic files will be provided only for the specific purpose of providing a reference document to the Contractor to be used for backgrounds for the completion by the Contractor of shop drawings only.

3. The Contractor shall agree the electronic information is for reference purposes only and that the Architect provided no warranty of any kind, written or implied, as to the completeness or accuracy of the electronic files.
4. The Contractor shall agree to hold all information contained in the electronic file confidential and protect it against use by others.
5. The Contractor shall be required to indemnify and hold harmless the Architect, its principals, employees, and its consultants in accordance with all terms and conditions listed in the Architect's Indemnification and Hold Harmless Agreement.

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. 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 enough time for Submittal review, including time for re-submittals, as follows. Time for review shall commence on Architect's receipt of a fully prepared and complete 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 re-submittals.

1. Initial Review: Allow (14) fourteen calendar days for initial review of each Submittal. Allow additional time if coordination with subsequent Submittals is required. The Architect will advise Contractor when a Submittal being processed must be delayed for coordination.
2. All submittals shall be forward to the Owner by the Architect following the Architect's review for review and final approval.
3. Intermediate Review: If intermediate Submittal is necessary, process it in same manner as initial submittal.
4. Re-submittal Review: Allow (14) fourteen calendar days calendar for review of each re-submittal.
5. Sequential Review: Where sequential review of Submittals by Architect's consultants, Owner, or other parties is indicated, allow (21) twenty one calendar days for initial review of each Submittal.
6. No extension of contract time will be considered or authorized because of failure to transmit submittals far enough in advance of the work to permit processing.

D. Identification: Place a permanent label or attach Form 009310 Submittal Cover Sheet, included in the Project Manual, with each Submittal for identification.

1. Indicate name of firm or entity that prepared each Submittal on label or title block.

2. Provide a space not less than 6 by 8 inches on label or beside title block to record Contractor's review and approval stamp, markings, date and Contractor's signature with and action taken by the Architect and its Consultants.
3. Include the following information on label for processing and recording action taken:

    a. Project name.
    b. Date.
    c. Name of Contractor.
    d. Name of subcontractor.
    e. Name of supplier.
    f. Name of manufacturer.
    g. Submittal number or other unique identifier, including revision identifier.

        1) Submittal number shall include the Specification Section number followed by a decimal point and then a sequential article number (e.g., 06100.01). Re-submittals shall include an alphabetic suffix after another decimal point (e.g., 06100.01.A).

    h. Number and title of appropriate Specification Section.
    i. Other necessary identification.

E. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on Submittals.

F. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using transmittal form along with a submittal cover sheet, Form 009310 – Submittal Cover Sheet, included in the Project Manual. The Architect will return submittals, without review, received from sources other than the Contractor.

1. Transmittal Form: Provide on form, the following information:

    a. Project name:
    b. Date.
    c. Destination (To:).
    d. Source (From:).
    e. Specification Section number and title.
    f. Transmittal number, numbered consecutively.
    g. Submittal and transmittal distribution record.
    h. Remarks.
    i. Signature of transmitter.

2. 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 same label information as related Submittal.

G. Re-submittals: Make re-submittals 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. Clearly indicate extent of revision from previous submittal.
3. Resubmit submittals until they are marked "approved” or “approved as noted".

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: Use only final Submittals with mark indicating "approved” or “approved as noted" from Architect's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

A. Preparation: Submit a Schedule of Submittals, arranged in chronological order by dates required by construction schedule to the Architect and Owner. Include time required for review, re-submittal, ordering, manufacturing, fabrication, and delivery when establishing dates.

1. Coordinate Submittals Schedule with the Schedule of Values, and Contractor's Construction Schedule.

2.2 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

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 printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each Submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's written recommendations.
    b. Manufacturer's written product specifications.
    c. Manufacturer's written installation instructions.
    d. Standard color charts.
    e. Manufacturer's catalog cuts.
    f. Wiring diagrams showing factory-installed wiring.
    g. Printed performance curves.
    h. Operational range diagrams.
    i. Mill reports.
    j. Standard product operation and maintenance manuals.
    k. Compliance with specified referenced standards.

l. Testing by recognized testing agency.
m. Application of testing agency labels and seals.
n. Notation of coordination requirements.

4. Submit Product Data concurrent with Samples.

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. Dimensions.
b. Identification of products.
c. Fabrication and installation drawings.
d. Roughing-in and setting diagrams.
e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
f. Shop work manufacturing instructions.
g. Templates and patterns.
h. Schedules.
i. Design calculations.
j. Compliance with specified standards.
k. Notation of coordination requirements.
l. Notation of dimensions established by field measurement.
m. Relationship to adjoining construction clearly indicated.
n. Seal and signature of professional engineer licensed in the state Project is located if specified.
o. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring and who makes the connection.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 42 inches.

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 appropriate Specification Section.

3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

4. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection as indicated in the specifications.

    a. Number of Samples: Submit four sets of Samples. The Architect will retain one set, the Owner will retain one set; the remainder will be returned.

        1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
        2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

2.3 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Number of Copies: Submit two copies of each submittal, unless otherwise indicated. Architect will not return copies.
2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

B. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person in accordance with Division 01 Section "Project Management and Coordination". Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

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

D. Installer Certificates: Prepare 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.

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

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

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

H. Material Test Reports: Prepare 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.

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

J. Research/Evaluation Reports: Prepare 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.

K. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."

L. Design Data: Prepare 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.

M. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:

1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.

4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

N. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:

1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

O. Construction Photographs and Digital Images: Digital Images: Contractor to submit progress photographs showing a minimum of eight (8) different views of work under construction with each monthly application for payment. Photographs are to be taken from the locations, where established by the Architect. Photographs images on CD-ROM and shall bear the date of exposure, name of the Project, Contractor, and Architect. Provide images in uncompressed TIFF format, produced by a digital camera with minimum sensor size of at least 5.0 megapixels, and at an image resolution of not less than 1024 by 768 pixels.

P. Material Safety Data Sheets (MSDSs): Submit information directly to Owner.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. 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, sign and date before submitting to Architect.

B. 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 along with the Contractor’s original signature.

3.2 ARCHITECT'S ACTION

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

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

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

D. Partial Submittals are not acceptable, will be considered non-responsive, and will be returned without review. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

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

END OF SECTION 013300

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

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

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

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

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

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

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

G. “In Kind”: Identical to the existing item, with all the same features, finishes, options, etc.

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

I. “Products”: new material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials and components required for reuse when indicated as such.

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

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

L. “Testing Agency”: A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

M. Where the phrases “submit to the Architect” or “report to the Architect” or “consult with the Architect” or phrases of like effect are used, it is intended that such reports or submissions to, and consultations with the Architect shall be made.

N. “Installer”: An installer is the Contractor or another entity engaged by the Contractor, either as an employee, Subcontractor, or Contractor of lower tier, to perform a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.

1. The term “experienced”, when used with the term installer, means having a minimum of five previous projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with requirements of the authority having jurisdiction.

1.3 INDUSTRY STANDARDS

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

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

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

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

ADAAG Americans with Disabilities Act (ADA)
Architectural Barriers Act (ABA)

1.4 ABBREVIATIONS AND ACRONYMS

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

AA	Aluminum Association, Inc. (The)
ACI	ACI International (American Concrete Institute)
AGC	Associated General Contractors of America (The)
AIA	American Institute of Architects (The)
ANSI	American National Standards Institute
ASTM	ASTM International (American Society for Testing and Materials International)
CSA	CSA International (Formerly: IAS - International Approval Services)
CSI	Construction Specifications Institute (The)
EIA	Electronic Industries Alliance
EJCDC	Engineers Joint Contract Documents Committee
FMG	FM Global (Formerly: FM - Factory Mutual System)
FMRC	Factory Mutual Research (Now FMG)
IAS	International Approval Services (Now CSA International)
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers, Inc. (The)
ILI	Indiana Limestone Institute of America, Inc.
ISO	International Organization for Standardization
ITS	Intertek
MFMA	Metal Framing Manufacturers Association
MH	Material Handling (Now MHIA)
MHIA	Material Handling Industry of America

NACE	NACE International (National Association of Corrosion Engineers International)
NECA	National Electrical Contractors Association
NEMA	National Electrical Manufacturers Association
NETA	InterNational Electrical Testing Association
NFPA	NFPA (National Fire Protection Association)
NRMCA	National Ready Mixed Concrete Association
NSSGA	National Stone, Sand & Gravel Association
OPL	Omega Point Laboratories, Inc. (Acquired by ITS - Intertek)
SWRI	Sealant, Waterproofing, & Restoration Institute
UL	Underwriters Laboratories Inc.

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

ICBO	International Conference of Building Officials (See ICC)
ICBO ES	ICBO Evaluation Service, Inc. (See ICC-ES)
ICC	International Code Council

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Specific administrative and procedural minimum actions are specified in this Section, as extensions of provisions in General Conditions and other Contract Documents. These requirements have been included for special purposes as indicated. Nothing in this Section is intended to limit types and amounts of temporary work required, and no omission from this Section will be recognized as an indication by Architect or its Engineers that such temporary activity is not required for successful completion of the Work and compliance with requirements of Contract Documents. Provisions of this Section are applicable to, but not by way of limitation, utility services, construction facilities, security/protection provisions, and support facilities, etc.

C. The types of temporary support facilities required and to be provided includes, but not by way of limitation, security, optional field offices, optional storage sheds, electrical power distribution, lighting, enclosure of work, hoisting facilities, ladders, scaffolds, first aid facilities, private telephones, cleanup facilities, dumpsters and waste disposal services, and similar miscellaneous general services, all as may be reasonably required for proficient performance of the work and accommodation of personnel at the site including Owner's construction forces, Architect’s and Engineers’ personnel. Include moving, relocation and reinstallation as may be required to accommodate construction progress. Discontinue and remove temporary support facilities, and make incidental similar use of permanent work of the project, only when and in manner authorized by the Architect; and, if not otherwise indicated, immediately before time of Substantial Completion. Locate temporary support facilities for convenience of users, and for minimum interference with construction activities.

1.3 USE CHARGES

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

B. Electric Power Service: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

C. Water Service: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.4 QUALITY ASSURANCE

A. General: In addition to compliance with governing regulations and rules/recommendations of franchised utility companies, comply with specific requirements indicated and with applicable local industry standards for construction work (published recommendations by local consensus "building councils").

B. ANSI Standards: Comply with applicable provisions of ANSI A10-Series standards on construction safety.

C. NFPA Code: Comply with NFPA Code 241 "Safeguarding Construction, Alteration and Demolition Operations".

D. Conservation: In compliance with Owner's policy on energy/materials conservation, install and operate temporary facilities and perform construction activities in manner which reasonably will be conservative and avoid waste of energy and materials including water.

E. ADA and ICC/ANSI Compliance: Construction for this Project must comply with the current adopted version of the Americans with Disability Act (ADA) and the ICC/ANSI A117.1.

F. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with current adopted version of the NEC.

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

1.5 PROJECT CONDITIONS

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

B. Establish and initiate the use of each temporary facility at time first reasonably required for proper performance of the Work. Terminate use and remove facilities at earliest reasonable time, when no longer needed or when permanent facilities have, with authorized use, replaced the need.

C. Install, operate, maintain and protect temporary facilities in a manner and at locations which will be safe, non-hazardous, sanitary and protective of persons and property, and free of deleterious effects.

D. Installers shall verify clearances of all paths at job site leading to final installation locations, and break down the final product components into component assemblies sized accordingly to negotiate all corners, turns, etc., in the path to its final installation location.

E. Contractors will provide their own extension cords, hoses, etc. as required for their work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Materials for Temporary Work: Lumber, plywood, gypsum board, insulation, paints, etc. required for temporary work shall comply with corresponding specification sections and applicable codes and regulations of in effect at the Project location by authorities having jurisdiction.

2.2 TEMPORARY FACILITIES

A. Storage and Fabrication Sheds: Contractor shall provide its own storage trailer equipped to accommodate materials and equipment for construction operations. As an alternate, the Owner may be able to make accommodations within the building and project site for storage.

1. Store combustible materials apart from building.

2.3 FIRE PROTECTION PROVISIONS

A. Fire Extinguishers: Provide Fire protection equipment during the entire construction period as required by the authority having jurisdiction of types, sizes, numbers and locations as would be reasonably effective in extinguishing fires during early stages, by personnel at Project site. Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures. Post warning and quick instructions at each extinguisher location, and instruct personnel at Project site, at time of their first arrival, on proper use of extinguishers and other available facilities at Project site.

2.4 ACCESS PROVSIONS

A. Provide ramps, stairs, ladders and similar temporary access elements as reasonably required to perform the Work and facilitate its inspection during installation. Comply with reasonable requests of governing authorities performing inspections. When permanent stairs are available for access during construction, cover finished surfaces with sufficient protection to ensure freedom from damage and deterioration at time of Substantial Completion.

B. Use of Owner’s elevators is not allowed.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

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

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.

B. Sanitary Facilities: Use of owner’s toilet facilities is not allowed. Contractor shall provide, at their own expense, temporary self-contained toilet units with provisions to remove effluent lawfully, wash facilities, and drinking water with cups for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

C. TEMPORARY WATER SERVICE:

1. Water Service: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations. Use of Owner's existing water service facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

D. TEMPORARY ELECTRIC SERVICE AND LIGHTING

1. Electric Power Service: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations. Use of Owner's existing electric power service will be permitted, as long as equipment is maintained in a condition acceptable to Owner.
2. All necessary labor and materials required for the installation and maintenance of subsequent removal of the temporary distribution system including all fuses and lamps shall be provided by the Contractor.
3. Do not allow, provide or make available for use by any subcontractor, supplier, installer, employee any apparatus, equipment, or cord sets not meeting OSHA requirements.

4. Contractor shall be responsible for obtaining all temporary wiring permits required to facilitate the work; prior to, as well as during construction and adjust the temporary wiring system as needed to accommodate the construction of the Work.
5. Contractor shall maintain temporary light and power until it is no longer required as determined by the Contractor. Contractor shall keep the system in good repair and shall promptly replace burned out, defective, missing or broken lamps. Permanent fixtures mays be used for temporary lighting when used for temporary lighting purposes in permanent fixtures when the Contractor replaces lamps with new, unused lamps immediately prior to the final acceptance of the permanent system.
6. Contractor shall alter and relocate temporary wiring as required when such interfaces with construction as determined by the Contractor. Contractor shall disconnect and completely remove the temporary electrical system or portions thereof in a neat, workman-like manner without cost Owner.
7. Contractor shall not disrupt electrical power whether temporary or permanent during normal working hours. Any switching, splicing, or other work performed by the Contractor, necessitating an interruption of power shall be performed during times when the buildings are not in use by the Owner or their users.
8. Contractor shall provide for temporary site security lighting as required.

E. Telephone Service: Contractor shall use their own cellular telephone service for use by all construction personnel.

3.3 SUPPORT FACILITIES INSTALLATION

A. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Maintain access for emergency and fire-fighting equipment and access to fire hydrants.

B. Parking: Use designated areas of Owner's existing parking areas for construction personnel.

C. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction.

1. The Contractor shall provide waste-collection containers for use by all construction personnel to deposit all rubbish, debris, boxes, crates, etc. The General Contractor shall remove and properly dispose of the contents of the waste-collection containers as necessary to keep the progress of the job moving.

2. The Contractor shall maintain the construction areas as clean as the progress of the work will permit.

    a. The Contractor will clean up all its waste materials, rubbish and debris on a daily basis.
    b. The Contractor will place its waste materials, rubbish and debris in the waste-collection containers on a daily basis.

c. The Contractor will be responsible to keep the construction area, etc. clean and free of debris, materials, etc. at all times during the entire period of construction. If the Contractor does not adhere to this requirement, the Owner will engage a cleaning contractor to thoroughly clean the area and will back charge the General Contractor for all costs involved.

3. Upon Substantial Completion, the Contractor shall completely clean the entire Project. The cleaning shall include, but is not limited to, cleaning of all surfaces, finishes, equipment, fixtures, etc… The building and grounds and surrounding areas shall be left in a condition acceptable to the Owner.

D. Existing Stair Usage: Use of Owner's existing stairs will be permitted, as long as stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

B. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

C. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.

1. Smoking is prohibited throughout the entire campus – no exceptions.
2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
3. Coordinate with NJM Hot Work Permit Requirements.
4. Fire Extinguishers: Provide portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

3.5 OPERATION, TERMINATION, AND REMOVAL

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

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

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

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of the Contractor. Owner reserves right to take possession of Project identification signs.
2. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Closeout Procedures.

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

1.3 DEFINITIONS

A. Products: Items purchased for incorporating into the Work, purchased for Project. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility**,** except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.
3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor. No Substitutions for Convenience after the submission of the bids.

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

1.4 SUBMITTALS

A. Comparable Product Requests: No Substitutions for Convenience after the submission of the bids.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

1. Contractor is responsible for providing products and construction methods compatible with products and construction methods of Owner's own forces.
2. If a dispute arises over concurrently selectable but incompatible products, Architect will determine which products shall be used.

B. Source Limitations: to the fullest extent possible, provide products of the same kind from a single source

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

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

B. Delivery and Handling:

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

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation and in accordance with manufacturer's written instructions.
4. Store cementitious products and materials on elevated platforms.
5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.

6. Comply with product manufacturer's written instructions for all products, for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.
8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms of warranty are included with the Specifications, prepare a written document using appropriate form properly executed.
3. Refer to Specification Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures" and as required by specific Sections in the Project Manual.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.

3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
7. Or Approved Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in Part 2 Article "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Available Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
2. Available Manufacturers: Where Specifications include a list of manufacturers, provide a product by one of the manufacturers listed, or an unnamed manufacturer, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
3. Product Options: Where Specifications indicate that sizes, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specified product or system. Comply with provisions in Part 2 "Product Substitutions" Article for consideration of an unnamed product or system.
4. Basis-of-Design Product: Where Basis of Design Products are indicated, the Contractor shall provide the designated product.
5. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

    a. If no product available within specified category matches and complies with other specified requirements, comply with provisions in Part 2 "Product Substitutions" Article for proposal of product.

6. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product that complies with other specified requirements.

    a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that does not include premium items.
    b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 PRODUCT SUBSTITUTIONS

A. Timing: Architect will not consider requests for substitution received after the submission of the bids.

2.3 COMPARABLE PRODUCTS

A. Conditions: Architect will consider Contractor's request for comparable product 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:

1. Evidence that the proposed product does not require extensive revisions to the Contract Documents that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

SECTION 016600 – STORAGE AND HANDLING REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 REQUIREMENTS INCLUDED

A. Storage, General.

B. Enclosed Storage.

C. Maintenance Storage.

D. Maintenance of Equipment Storage.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 STORAGE, GENERAL

A. Store products, immediately on delivery, in accordance with manufacturer's written instructions, with seals and labels intact and legible. Protect until installed.

B. Arrange storage in a manner to provide access for maintenance of stored items and for inspection.

3.2 ENCLOSED STORAGE

A. Store products, subject to damage by the elements, in substantial weather tight enclosures.

B. Maintain temperature and humidity within ranges stated in manufacturer's written instructions

C. Provide humidity control and ventilation for sensitive products as required by manufacturer's written instructions.

D. Store unpacked and loose products on shelves, in bins, or in neat groups of like items.

3.3 MAINTENANCE OF STORAGE

A. Periodically inspect stored products on a scheduled basis.

B. Verify that storage facilities comply with manufacturer's product storage requirements.

C. Verify that manufacturer's required environmental conditions are maintained continually.

D. Verify that surfaces of products exposed to the elements are not adversely affected; that any weathering of finishes is acceptable to the manufacturers and under requirements of Contract Documents.

3.4 MAINTENANCE OF EQUIPMENT STORAGE

A. For mechanical and electrical equipment in long-term storage, provide manufacturer's service package.

B. Service equipment on a regularly scheduled basis, maintaining a log of services; submit as a Record Document.

END OF SECTION 016600

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. General installation of products.
3. Starting and adjusting.
4. Coordination of Owner installed products.
5. Progress cleaning.
6. Protection of installed construction.
7. Correction of the Work.

B. Related Requirements:

1. Section 011000 "Summary" for limits on use of Project site.
2. Section 013300 "Submittal Procedures" for submitting surveys.
3. Section 017329 “Cutting and Patching”.
4. Section 017700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.
5. Section 024119 "Selective Demolition" for demolition and removal of selected portions of the building.
6. Section 078413 "Penetration Firestopping" for patching penetrations in fire-rated construction.

PART 2 - PRODUCTS

2.1 MATERIALS

A. 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. Existing Conditions for Renovation, Alteration and Addition Work: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.

B. Existing Utilities: The existence and location of underground and other utilities and construction indicated are generally known as existing, are not guaranteed and are provided for reference only. Before beginning site work, investigate and verify the existence, location, and depth of underground utilities and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical and telecommunication services.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

    a. Description of the Work.
    b. List of detrimental conditions, including substrates.
    c. List of unacceptable installation tolerances.
    d. Recommended corrections.

2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

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

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

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

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. Submit requests on "Request for Information Form.

E. Should the Contractor encounter elevational, dimensional, subsurface and/or latent conditions at the Site materially differing from those shown on the Plans or indicated in the Specifications, he shall immediately give written notice to the Architect of such conditions before they are disturbed. The Architect will thereupon promptly investigate the conditions and if the Architect finds that they materially differ from those shown on the Plans or indicated in the Specification, he will at once make such changes in the Plans/Specifications as he may find necessary, and any increase or decrease of cost resulting from such changes will be adjusted in the manner provided in the Contract Documents.

3.3 CONSTRUCTION LAYOUT

A. Building Lines and Levels: Locate and lay out control lines and levels for foundations and others required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels.

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

3.4 INSTALLATION

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

1. Make vertical work plumb and make horizontal work level.

2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
4. Maintain minimum headroom clearance of (8 feet (2.4 m) eight feet in spaces without a suspended ceiling.

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

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

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

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

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

G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

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

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

3.5 NEW WORK AT EXISTING LOCATIONS

A. When a new wall, ceiling, roof or floor assembly is indicated where an existing wall, ceiling, roof or floor assembly exists, the existing shall be removed with associated utilities removed and capped behind the surface of the remaining substrate unless otherwise noted at no additional cost to the Owner.

B. When new finishes are scheduled, indicated or required over existing substrates, the Contractor shall completely remove existing finish materials, such as, but not necessarily limited to,

veneers, coatings, films, oils, sealers, adhesives and other residual materials which are not acceptable substrates for new finishes per new finish manufacturer's written specifications and best industry standards whether specifically indicated or not. Defective substrates which are no longer uniform, dimensionally stable, structurally sound, or otherwise unacceptable for the installation of new finishes, shall be removed and replaced with new material compatible with existing and suitable for the new finish in accordance with material manufacturer's written literature and recognized industry standards. In all cases, consult material manufacturer's literature for new finishes to be installed prior to starting the work.

3.6 OWNER INTALLED PRODUCTS

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

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.

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

3.7 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

    a. 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 Section 017419 "Construction Waste Management and Disposal."

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

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

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

3.8 STARTING AND ADJUSTING

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

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

C. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 01 Section "Quality Requirements."

3.9 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

C. In the event of temporary suspension of Work or during inclement weather, each Prime Contractor will cause his Subcontractors to protect carefully his and their work and materials against damage or injury from the weather. If, in the opinion of the Architect, any work or materials shall have been damaged or injured by reason of failure on the part of a Contractor or any of his Subcontractors to so protect his work, such materials shall be removed and replace at the expense of the responsible Contractor.

3.10 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017300

SECTION 017329 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

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 surfaces to original conditions after installation of other Work.

1.4 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

B. Operational Elements: Unless directed otherwise, do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or resulting in increased maintenance or decreased operational life or safety. Operating elements include, but are not limited to, the following:

1. Exterior wall construction.
2. Primary operational systems and equipment.
3. Air or smoke barriers.
4. Fire-suppression systems.
5. Mechanical systems piping and ducts.
6. Control systems.
7. Communication systems.
8. Conveying systems.
9. Electrical wiring systems.

C. Miscellaneous Elements: Unless directed otherwise, do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or resulting in increased maintenance

or decreased operational life or safety. Miscellaneous elements include, but are not limited to, the following:

1. Water, moisture, or vapor barriers.
2. Membranes and flashings.
3. Equipment supports.
4. Piping, ductwork, vessels, and equipment.
5. Noise- and vibration-control elements and systems.

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace all construction that has been cut and patched in a visually unsatisfactory manner.

E. Submittals: Approval of procedures for cutting and patching is required before proceeding. Submit a proposal describing procedures. Include the following information, as applicable, in the proposal:

1. List products to be used and firms or entities that will perform Work as well as a detailed description of the Work itself.
2. Indicate dates when cutting and patching will be performed and the anticipated duration of the Work.
3. List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.
4. If cutting and patching involves additions and modifications to structural elements, submit details and engineering calculations to show how these additions will integrated with the original structure. In all cases indicate any changes in the elevation of the ceiling, or the effect on mechanical and electrical distribution systems.
5. Prior to the cutting and patching of interior architectural elements, building components, or modification of exposed finishes, review the repair and restoration procedures with the Architect prior to the start of the Work.
6. Approval by the Architect to proceed with cutting and patching does not waive the Architect’s or Owner’s right to later require complete removal and replacement of a part of the Work found to be unsatisfactory or otherwise unacceptable.

PART 2 - PRODUCTS

2.1 MATERIALS

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

B. In-Place Materials: Use materials 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 match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed, prior to the start of the Work.

B. Before proceeding, meet at the site with the Owner and the Architect and other representatives as may be required prior to cutting and patching. Review areas of potential interference and conflicts. Coordinate procedures and resolve potential conflicts before proceeding.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. 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.

B. Once new finishes are installed, contractor shall adequately protect new work from damage (floor protection boards, sheet protection for wall and ceilings, etc…). Contractor shall be fully responsible to repair or replace damaged work in place prior to Owner acceptance.

C. Contractor shall suitably protect adjacent existing construction to remain; including doors and entrances, corridor finishes and other areas of the building used for access to the project site. Contractor shall be fully responsible to repair or replace damaged existing finishes, surfaces and equipment prior to Owner acceptance. Extent of repair or replacement shall extend as necessary so as to leave no evidence of patching.

D. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

E. Concealed utilities, structural elements and hazards: Prior to cutting and patching work, survey and locate utilities, structural elements and hazards using locator/detection equipment. Promptly submit a written report to the Architect describing the nature and extent of any conflicts with the intended function or design of the work. Do not proceed until conflicts are resolved.

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

3.3 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. 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 as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: 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 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.

C. 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 possible. Provide materials and comply with installation requirements specified in other Sections.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate 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 eliminate 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, apply primer and intermediate paint coats 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 re-hang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight condition.

D. Certain finishes must be replaced. Repair is not acceptable. Damaged surfaces, exposed to view which cannot be repaired without visible evidence of such repair, chipped or broken glass, scratched transparent finishes, scratched reflective surfaces, ceramic tile, millwork, trim. Where special order finish materials are involved, preorder sufficient quantities necessary for repair prior to the start of the Work.

E. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

3.4 CUTTING AND PATCHING - GENERAL

A. The Contractor shall perform all cutting, drilling, removal, cleaning, servicing, repairing, patching, re-hanging, restoration, etc. that may be required in connection with its work. The Contractor shall be responsible for maintaining all existing warranties.

END OF SECTION 017329

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for the following:

1. Salvaging, recycling, disposing nonhazardous demolition materials.

1.3 DEFINITIONS

A. Owner reserves first right of refusal for removal and salvage items. Items indicated for removal and salvage remain the Owner’s property. Remove, clean, and pack items to protect against damage and deliver to Owner’s designated storage area with labels to identify contents of containers.

B. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

C. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

D. 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.

E. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 PERFORMANCE

A. Recycle Goals: Owner's goal is to recycle as much nonhazardous demolition and construction waste as reasonably possible.

1.5 SUBMITTALS

A. Waste Management Plan: Submit (3) three copies of plan within (30) thirty days of date established for the Notice to Proceed.

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. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 IMPLEMENTATION

A. General: Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management during the entire duration of the Contract.

1. Comply with Division 01 Section "Temporary Facilities and Controls" for operation, termination, and removal requirements.

B. Provide separation, handling, transportation, recycling, salvage, and landfilling for all demolition and waste materials.

C. Do not handle, separate, store, salvage, or recycle hazardous materials. Contact Architect if hazardous materials are encountered.

3.2 SALVAGING DEMOLITION WASTE

A. Owner reserves first right of refusal for removal of salvage items. Items indicated to be removed, and salvaged items, remain the Owner’s property. Remove, clean and pack items to protect against damage and deliver to Owner’s designated storage area with labels to identify contents of containers. Demolished materials shall become the Contractor’s property and shall be removed from the site with further disposition at the Contractor’s option.

B. Salvaged Items for Reuse in the Work:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
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, supports, and miscellaneous materials necessary to make items functional for use indicated.

C. Salvaged Items for Sale and Donation: Not permitted on Project site.

D. Salvaged Items for Owner's Use:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area on-site where designated by Owner.

E. Protect items from damage during transport and storage.

3.3 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 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.

END OF SECTION 017419

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Warranties.
3. Final cleaning.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following for each project.

1. In the Application for Payment that coincides with, or first follows, the date of Substantial Completion is paid, show 100% completion for the portion of the Work claimed as Substantially Complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
2. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete (see “Ready for Closeout” Form).
3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include permits, operating certificates, and similar releases.
5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, and similar final record information.
6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
7. Complete startup testing of systems, and instruction of the Owner’s operating and maintenance personnel.
8. Submit test/adjust/balance records.
9. Terminate and remove temporary facilities from Project site.
10. Complete final cleaning requirements, including touchup painting.

11. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
12. Advise Owner of pending insurance change over requirements.
13. Make final change over of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of change over in security provisions.

B. Inspection: Submit a written request for inspection for Substantial Completion in accordance with AIA Document A201, Article 9.8 Substantial Completion and as follows:

1. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. After inspection the Architect will prepare the Certificate of Substantial Completion or will notify Contractor of items, either on Contractor's list or additional items identified by Architect that must be completed or corrected before the certificate will be issued.
2. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
3. Results of completed inspection will form the basis of requirements for Final Completion.
4. Submit completed "Ready for Closeout" Form in Section 009000.

1.4 FINAL COMPLETION/READY FOR CLOSEOUT

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
2. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
3. Submit the final payment request with releases and supporting documentation not previously submitted and accepted.
4. Submit an updated final statement, accounting for final changes to the Contract Sum.

B. Inspection: Submit a written request for final inspection/closeout on the form provided in Section 009000 – Project Forms, Form 009500 – Ready for Closeout. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit with Request for Substantial Completion Inspection, three copies of punchlist. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:

a. Project name.
b. Date.
c. Name of Architect.
d. Name of Contractor.
e. Page number.

1.6 WARRANTIES

A. Submittal Time: Submit written warranties for designated portions of the Work as required by specific Sections of the Project Manual.

B. Disclaimers and Limitations: Manufacturer’s disclaimers and limitations on product warranties do no relieve the Contractor of the Warranty on the Work that incorporates the products. Manufacturer’s disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

D. Provide additional copies of each warranty to include in operation and maintenance manuals.

E. Warranty Requirements

1. Related Damages and Losses: when correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted work.
2. Reinstatement of Warranty: when Work covered by a warranty has failed and has been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
3. Replacement Cost: upon determination the Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with the requirements of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from its use of the Work through a portion of its anticipated service life.
4. Owner's Recourse: expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights or remedies.

F. Warranty Submittals

1. Submit written warranties to the Architect prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.
2. When a special warranty is required to be executed by the Contractor, or the Contract and a Subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner through the Architect for approval prior to final execution.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations. All premises must be broom clean.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
b. Sweep effected 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 hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
e. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo 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. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
g. Remove labels that are not permanent.
h. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

i. Wipe surfaces of equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
j. Replace parts subject to unusual operating conditions.
k. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
l. Leave Project clean and ready for occupancy.

C. Comply with safety standards for cleaning and dispose of waste materials. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 017700

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation manuals for systems, subsystems, and equipment.
2. Maintenance manuals for care and maintenance of products, materials, finishes, systems and equipment.

1.3 SUBMITTALS

A. Submittal: Submit (2) two copies of each manual in final form at least (15) fifteen days before requesting inspection for substantial completion. Architect will return copy with comments after inspection for substantial completion.

1. Correct or modify each manual to comply with Architect's comments. Submit (3) three copies of each corrected manual within (15) fifteen days of receipt of Architect's comments.

1.4 COORDINATION

A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 MANUALS, GENERAL

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: Enclose title page in transparent plastic sleeve. 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, address, and telephone number of Contractor.
6. Name and address of Architect.
7. 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.

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.

1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

    a. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch (215-by-280-mm) white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

    a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
    b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.2 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and equipment descriptions, operating standards, operating procedures, operating logs, wiring and control diagrams, and license requirements.

B. Descriptions: Include the following:

1. Product name and model number.
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 start-up, break-in, and control procedures; stopping and normal shutdown instructions; routine, normal, seasonal, and weekend operating instructions; and required sequences for electric or electronic systems.

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.

2.3 PRODUCT MAINTENANCE MANUAL

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.

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 inspection procedures, types of cleaning agents, methods of cleaning, schedule for cleaning and maintenance, and repair instructions. Include instructions on methods and material agents known to be detrimental and to be avoided.

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.

2.4 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

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.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including maintenance instructions, drawings and diagrams for maintenance, nomenclature of parts and components, and recommended spare parts for each component part or piece of equipment:

D. Maintenance Procedures: Include test and inspection instructions, troubleshooting guide, disassembly instructions, adjusting instructions**,** and demonstration and training video DVD if available**,** that detail essential maintenance procedures:

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.

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. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

B. 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.

C. 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.

D. 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.

E. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.

1.3 SUBMITTALS

A. Record Drawings and Specifications: Comply with the following:

1. Number of Copies: Submit marked-up Record Prints in PDF Format and Project Specifications.CD containing scan of marked up record prints.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Drawings: Maintain one set of black-line white prints of the Contract Drawings and Shop Drawings.

1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
b. Accurately record information in an understandable drawing technique.
c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

2. Content: Types of items requiring marking include, but are not limited to, the following:

    a. Dimensional changes to Drawings.
    b. Revisions to details shown on Drawings.
    c. Revisions to routing of piping and conduits.
    d. Revisions to electrical circuitry.
    e. Actual equipment locations.
    f. Locations of concealed internal utilities.
    g. Changes made by Change Order or Construction Change Directive.
    h. Changes made following Architect's written orders.
    i. Field records for variable and concealed conditions.
    j. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize Record Prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Record Digital Copy: Provide the Owner with a disk of all record drawings scanned onto a disk in PDF format.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders, and Record Drawings where applicable.

2.3 RECORD PRODUCT DATA

A. Maintain one copy of each Product Data Submittal. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site and from the manufacturer's installation instructions and recommendations. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark-up record drawings and specifications.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. During the progress of the installation, keep a careful record of all changes and variations in its work from the layout shown on the Contract Drawings in order that the Owner may be provided with a complete set of all Contract Documents showing the work as actually installed.

B. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project. Update the record Contract Documents in the field office in his presence on a weekly basis. In addition to marking the Construction Documents for as-built conditions, submit written reports describing each as-built update.

C. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's and reference during normal working hours.

END OF SECTION 017839

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Provide all removal, proper and legal disposal work as required to complete selective demolition work and prepare existing areas for new work required including, but not limited to, the following:

1. Demolition, removal and legal disposal off-site of selected portions of the building, construction assemblies, and other incidental work, whether shown or not shown, but required to complete the installation of scheduled work, coordinated with other trades and construction components being replaced by new construction.
2. Disconnecting, capping or sealing, abandoning or removing utilities as indicated and/or required.
3. Patching, repairing and replacing areas damaged or altered by demolition work, with new materials and construction similar in kind unless otherwise indicated.
4. Contractor is ultimately responsible for all demolition, including that which is directly related to the Plumbing, HVAC and Electrical subcontracts. Contractor is responsible for the subcontractors' demolition of their respective subcontracts, i.e. Plumbing Subcontractor is responsible for the demolition and removal of all plumbing fixtures, piping, supports, cutting, capping and re-routing. HVAC subcontractor is responsible for all HVAC demolition and removal. Electrical subcontractor is responsible for Electrical demolition and removal, etc.
5. Interrelated items which involve more than one subcontractor shall be disconnected by its respective subcontractor, moved or removed by the Contractor, then reconnected by its respective subcontractor or removed from project by the Contractor.
6. Salvage of existing items to be reused, relocated or recycled.

B. Related Requirements:

1. Section 011000 "Summary" for restrictions on the use of the premises, Owner-occupancy requirements, and phasing requirements.
2. Section 017300 "Execution" for cutting and patching procedures.
3. Section 017320 “Cutting and Patching”.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.

C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.

D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Owner reserves first right of refusal for removal and salvage items. Items indicated for removal and salvage remain the Owner’s property. Remove, clean, and pack items to protect against damage and deliver to Owner’s designated storage area with labels to identify contents of containers. Demolished materials shall become the Contractor’s property and removed from the site with further disposition at the Contractor’s option.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For demolition firm and refrigerant recovery technician.

B. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, dust control and for noise control. Indicate proposed locations and construction of barriers.

C. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's 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. Use of elevator and stairs.
5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
6. Locations of proposed dust- and noise-control temporary partitions and means of egress.

D. Pre-demolition Photographs or Video: Submit before Work begins.

E. Warranties: Documentation indicated that existing warranties are still in effect after completion of selective demolition.

1.6 CLOSEOUT SUBMITTALS

A. Inventory: Submit a list of items that have been removed and salvaged.

1.7 FIELD CONDITIONS

A. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

1. Before selective demolition, Owner will remove the following items:

a. Loose furnishings and non-built-in items.
b. AV equipment, technology, and chemicals stored within the space.

B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

C. Hazardous Materials:

1. A report regarding hazardous materials within the building is on file with the Owner.
2. It is not expected that hazardous materials will be disturbed during the course of the Work described in the contract documents.
3. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Owner will remove hazardous materials under a separate contract.

D. Partial Demolition and Removal: Items indicated to be removed, and not intended to be salvaged or retained by the Owner, but of salvageable value to Contractor, may be removed from the project as work progresses. Transport salvaged items from the project as they are removed.

1. Storage or sale of removed items on site will not be permitted.

E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

PART 2 - PRODUCTS

2.1 PEFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and re-installed and items to be removed and salvaged.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect and Owner’s Representative in accurate detail. Pending receipt of directive from Architect and/or Owner’s Representative, rearrange demolition schedule as necessary to continue overall job progress without delay.

E. Survey of Existing Conditions: Record existing conditions by use of measured drawings, preconstruction photographs, preconstruction videotapes and/or templates.

1. Comply with requirements specified in Section 013233 "Photographic Documentation."
2. Inventory and record the condition of items to be removed and salvaged. Provide photographs and/or video of conditions that might be misconstrued as damage caused by salvage operations.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Use utility and material locator equipment to locate utilities, structural elements etc. concealed within the building’s construction.

B. Existing building fire protection system shall not be diminished. Removal of existing devices shall not occur until the new equipment is in place and ready for the switchover.

C. Existing Services/Systems to Remain: Locate and maintain services/systems indicated to remain and protect them against damage.

1. Comply with requirements for existing services/systems interruptions specified in Section 011000 "Summary."

D. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.

1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building. Provide minimum of (5) working days advance notice to Owner if shutdown of service is necessary during change-over.
3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.

    a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
    b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
    c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
    d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
    e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
    f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
    g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.

4. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

    a. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.
    b. Contractor’s scope of work includes, and the Contractor is required and expected to, patch any hole(s) resulting in the removal and/or capping of plumbing fixture(s) and/or piping in a wall, ceiling or floor to remain to match existing conditions, unless otherwise noted.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Comply with requirements for access and protection specified in Section 015000 "Temporary Facilities and Controls."

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
2. Erect temporary protection, such as walks, fences, railings, where required by authorities having jurisdiction.
3. Use utility and material locator equipment prior to cutting into existing construction to locate concealed utilities. By-pass or shut-off utilities anticipated to be near the demolition area.
4. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
5. Cover and protect furniture, furnishings, and equipment that have not been removed.
6. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."
7. Maintain dust-proof partitions and closures as required preventing spread of dust or fumes to occupied portions of the building.

C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

D. Damages: Notify the Architect and Owner of any damages. Promptly repair damages caused to adjacent facilities by demolition work at no cost to Owner.

E. Traffic: Conduct demolition operations and debris removal in a manner to ensure minimum interference with pedestrian and vehicular access and exit routes as well as other adjacent occupied or used facilities.

1. Do not close, block or otherwise obstruct streets, parking areas, walks or other occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

F. Explosives: Use of explosives will not be permitted.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
4. Maintain adequate ventilation when using cutting torches.
5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
6. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
7. Dispose of demolished items and materials promptly. Comply with requirements in Section 017419 "Construction Waste Management and Disposal."
8. Promptly patch and repair holes and damaged surfaces caused to adjacent construction by selective demolition operations.
9. Where repairs to existing surfaces are required, patch to produce surfaces with the integrity and visual appearance of the original installation when it was new and suitable for new scheduled finish materials.
10. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction to remain in a manner that eliminates evidence of patching and refinishing.
11. Patch and repair all surfaces in the newly created space(s) where demolition work extends from one finished area into another. Provide a flush and even surface of uniform stability, color and appearance.

    a. Closely match integrity, texture and finish of existing adjacent surfaces as when they were newly installed.
    b. Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
    c. Where patching smooth painted surfaces, extend final paint coat over entire unbroken surface containing the patch after the surface has received primer and first finish coat.
    d. Remove existing applied finishes over the entire unbroken surface area and replace with new materials, if necessary, to achieve uniform color and appearance.
    e. Inspect and test patched areas to demonstrate integrity of the installation, where feasible.

B. Removed and Salvaged Items:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.6 REPAIRS

A. Use repair materials identical to existing materials to the fullest extent possible.

B. Where identical materials are unavailable or cannot be used for exposed surfaces, code or hazard issues, use code compliant materials that visually match and are compatible with existing adjacent surfaces, that are free of damage, defects, deterioration, as originally installed when new, to the fullest extent possible pending approval by the Architect.

C. Use materials whose installed performance equals or surpasses that of the existing materials as originally installed and complies with applicable codes.

3.7 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

SECTION 035416 - HYDRAULIC CEMENT UNDERLAYMENT

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 hydraulic-cement-based, polymer-modified, self-leveling underlayment for application below interior floor coverings.

B. Product is to be used to prepare existing concrete subfloors in the project area as required to provide a suitable, level subfloor that is ready to receive indicated floor finishes.

C. Related Sections include the following:
   1. Division 09 Sections for patching and leveling compounds applied with floor coverings.

1.3 SUBMITTALS

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

B. Shop Drawings: Include plans indicating substrates, locations, and average depths of underlayment based on survey of substrate conditions.

C. Qualification Data: For qualified Installer.

D. Product Certificates: Signed by manufacturers of underlayment and floor-covering systems certifying that products are compatible.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Installer who is approved by manufacturer for application of underlayment products required for this Project.

B. Product Compatibility: Manufacturers of underlayment and floor-covering systems certify in writing that products are compatible.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials to comply with manufacturer's written instructions to prevent deterioration from moisture or other detrimental effects.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ventilation, ambient temperature and humidity, and other conditions affecting underlayment performance.

1. Place hydraulic-cement-based underlayments only when ambient temperature and temperature of substrates are between 50 and 80 deg F.

1.7 COORDINATION

A. Coordinate application of underlayment with requirements of floor-covering products and adhesives, to ensure compatibility of products.

PART 2 - PRODUCTS

2.1 HYDRAULIC-CEMENT-BASED UNDERLAYMENTS

A. Underlayment: Hydraulic-cement-based, polymer-modified, self-leveling product that can be applied in minimum uniform thickness of 1/4 inch and that can be feathered at edges to match adjacent floor elevations.

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. Ardex, K-15 Self-Leveling Underlayment Concrete.
b. Bonsal American, an Oldcastle company, ProSpec Level Set 200.
c. MAPEI Corporation, Novoplan 2.

2. Cement Binder: ASTM C 150, portland cement, or hydraulic or blended hydraulic cement as defined by ASTM C 219.
3. Compressive Strength: Not less than 4000 psi at 28 days when tested according to ASTM C 109/C 109M.
4. Underlayment Additive: Resilient-emulsion product of underlayment manufacturer, formulated for use with underlayment when applied to substrate and conditions indicated.

B. Water: Potable and at a temperature of not more than 70 deg F.

C. Primer: Product of underlayment manufacturer recommended in writing for substrate, conditions, and application indicated.

1. Primer shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for conditions affecting performance.

1. Proceed with application only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Prepare and clean substrate according to manufacturer's written instructions.

1. Treat nonmoving substrate cracks according to manufacturer's written instructions to prevent cracks from telegraphing (reflecting) through underlayment.
2. Fill substrate voids to prevent underlayment from leaking.

B. Concrete Substrates: Mechanically remove, according to manufacturer's written instructions, laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants that might impair underlayment bond.

1. Moisture Testing: Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates do not exceed a maximum moisture-vapor-emission rate as required by the underlayment manufacturer.

C. Adhesion Tests: After substrate preparation, test substrate for adhesion with underlayment according to manufacturer's written instructions.

3.3 APPLICATION

A. General: Mix and apply underlayment components according to manufacturer's written instructions.

1. Close areas to traffic during underlayment application and for time period after application recommended in writing by manufacturer.
2. Coordinate application of components to provide optimum underlayment-to-substrate and intercoat adhesion.
3. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through underlayment.

B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.

C. Apply underlayment to produce uniform, level surface.

1. Feather edges to match adjacent floor elevations.

D. Cure underlayment according to manufacturer's written instructions. Prevent contamination during application and curing processes.

E. Do not install floor coverings over underlayment until after time period recommended in writing by underlayment manufacturer.

F. Remove and replace underlayment areas that evidence lack of bond with substrate, including areas that emit a "hollow" sound when tapped.

3.4 PROTECTION

A. Protect underlayment from concentrated and rolling loads for remainder of construction period.

END OF SECTION 035416

SECTION 005010 – MISCELLANEOUS METALS

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. Provide all labor, materials, accessories, equipment and incidentals to complete Miscellaneous Metals work, as shown, specified, and as required, including, but not necessarily limited to, the following:

1. Metal fabrications include items made from iron and steel shapes, plates, bars, strips, tubes, pipes and castings which are not part of structural steel or other metal systems specified elsewhere.
2. Rough hardware.
3. Miscellaneous framing and supports to support other work including mechanical and electrical equipment and other applications where framing and supports are not specified in other sections.
4. Miscellaneous fabrications as noted and/or required to properly complete the project.

B. Related work specified elsewhere:

1. Gypsum Board Assemblies: Division 09.
2. Painting: Division 09.

1.3 QUALITY ASSURANCE

A. Codes and Standards: Comply with the provisions of the following, except as otherwise indicated:

1. IBC International Building Code 2018.
2. AISC "Manual of Steel Construction".
3. AWS Structural Welding Codes.

B. Qualifications for welding work: Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure".

1. If re-certification of welders is required, retesting will be Contractors responsibility.

C. Welding: Use qualified welders and comply with American Welding Society (AWS) DI.1, “Structural Welding Code – Steel”, (AWS) DI.3, “Structural Welding Code – Sheet Steel”.

D. Take field measurements prior to preparation of shop drawings and fabrication, where possible, to insure proper fitting of the work, however, do not delay job progress; allow for trimming and fitting of miscellaneous steel wherever the taking of field measurements before fabrication might delay the work.

E. Preassemble miscellaneous metal items in the shop to the greatest extent possible, so as to minimize field splicing and assembly of units at the project site. Disassemble units only to the extent necessary for shipping and handling limitations. Clearly mark units for re-assembly and coordinated installation.

F. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's specifications, anchor details, installation and application instructions for metal products, fabrications, accessories and primer paint used in miscellaneous metal fabrications, including paint products and grout.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the site at such intervals to insure uninterrupted progress of the work.

B. Store materials to permit easy access for inspection and identification. Keep metals inside a well-ventilated area off the ground, using pallets, platforms, or other supports. Protect metal members and packaged materials from corrosion and deterioration.

1.6 PROJECT CONDITIONS

A. Field Measurements: Where miscellaneous metal work is indicated to fit to other construction, check actual dimensions of other construction by accurate field measurements before fabrication; show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

B. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabricating miscellaneous metal work without field measurements. Coordinate other construction to ensure that actual dimensions correspond to guaranteed dimensions.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Metal Surfaces, General: For fabrication of miscellaneous metal work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam

marks, roller marks, stains, discoloration, rolled trade names, roughness and other imperfections.

B. Steel Plates, Shapes and Bars: ASTM A36/A36M.

C. Steel Tubing: Cold formed, ASTM A500; or hot rolled, ASTM A501.

D. Structural Steel Sheet: Hot rolled, ASTM A570; or cold rolled, ASTM A611, Class 1, of grade required for design loading, unless otherwise indicated.

E. Steel Pipe: ASTM A53, Type and grade (if applicable) as selected by Fabricator and as required for design loading stainless steel, black iron or galvanized as indicated; standard weight (Schedule 40), unless otherwise indicated, or another weight as required by structural loads.

F. Brackets, Flanges and Anchors: Cast or formed metal of the same type material and finish as supported rails, unless otherwise indicated.

G. Fasteners:

1. General: Provide zinc-coated fasteners where built into exterior walls. Select fasteners for the type, grade and class required.
2. Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with hex nuts, ASTM A 563/A 563M; and where indicated, flat washers.
3. Machine Screws: ASME B18.6.3 (ASME B18.6.7M).
4. Wood Screws: Flat head carbon steel, ASME B18.6.1.
5. Anchor Bolts: ASTM F1554, Grade 36.
6. Lag Bolts: ASME B18.2.1 (ASME B18.2.3.8M).
7. Plain Washers: Round, carbon steel, ASME B18.22.1 (ASME B18.22M).
8. Lock Washers: Helical, spring type, carbon steel, ASME B18.21.1 (ASME B18.22.2M).
9. Toggle Bolts: Tumble-wing type, class and style as needed, FS FF-B-588.

H. Welding Rods and Bare Electrodes and Filler Material: Provide type and alloy of filler metal and electrodes according to AWS specifications for metal alloy welded and as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.

I. Materials for Miscellaneous Steel: For the fabrication of miscellaneous metal work items which will be exposed to view, use only materials which are smooth and free of surface blemishes, including pitting, seam marks, roller marks, rolled trade names, and roughness. Remove such blemishes by grinding, or by welding and grinding, prior to cleaning, treating and application of surface finishes.

J. Paint:

1. Primer selected to be compatible with finish coats of paint. Coordinate selection of metal primer with finish paint requirements specified in Section 099000.
2. Shop Primer for Ferrous Metal: Organic zinc-rich primer, complying with SSPC-Paint 20 and compatible with topcoat.

2.2 FABRICATION

A. Workmanship: Use of materials of size and thickness indicated or, if not indicated, as required to produce strength and durability in finished product for use intended. Work to dimensions shown or accepted on shop drawings, using proven details of fabrication and support. Use type of materials shown or specified for various components or work.

B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32" unless otherwise shown. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

C. Weld corners and seams continuously, complying with AWS recommendations. At exposed connections, grind exposed welds smooth and flush to match and blend with adjoining surfaces.

D. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flat-heat (countersunk) screws or bolts. Use fasteners of same basic metal as fastened metal unless otherwise indicated. Do not use metals that are corrosive or incompatible with materials joined.

E. Provide for anchorage of type indicated and as required, coordinated with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use.

F. Cut, reinforce, drill and tap miscellaneous metal work as indicated to receive hardware and similar items.

G. Fabricate joints that will be exposed to weather in a manner to exclude water or provide weep holes where water may accumulate.

H. Electrodes for Welding: Comply with AWS Code and as recommended by product manufacturer.

I. Rough Hardware: Furnish bent or otherwise custom fabricated bolts, plates, inserts, anchors, hangers, dowels and other miscellaneous steel and iron shapes as required for framing, supporting, anchoring or securing woodwork to concrete or other structures. Straight bolts and other stock rough hardware items are specified in Division 6 - Sections.

J. Fabricate items to sizes, and shapes and dimensions required. Furnish malleable-iron washers for heads and nuts that bear on wood structural connections; elsewhere, furnish steel washers.

K. Miscellaneous Steel Framing and Supports: Furnish and install miscellaneous steel framing and supports which are not part of structural steel framework, as required to complete work.

L. Fabricate miscellaneous units to sizes, shapes and profiles indicated or, if not indicated, of required dimensions to receive adjacent other work to be retained by framing. Except as otherwise indicated, fabricate from structural steel shapes and plates and steel bars of welded construction using mitered joints for field connection. Cut, drill and tap units to receive hardware and similar items.

M. Equip units with integrally welded anchors for casting into concrete or building into masonry. Furnish inserts if units must be installed after concrete is placed.

N. Except as otherwise shown, space anchors 24” o.c. and provide minimum anchor units of 1-1/4” x 1/4” x 8” steel straps.

O. Miscellaneous Steel Trim: Provide shapes and sizes for profiles indicated. Except as otherwise indicated, fabricate units from structural steel shapes and plates and steel bars, with continuously welded joints and smooth exposed edges. Use concealed field splices wherever possible. Provide cutouts, fittings and anchorages as required for coordination of assembly and installation with other work.

2.3 COATINGS AND PRIMER PAINTS

A. Shop paint miscellaneous metal work, except members or portions of members to be embedded in concrete, masonry and surfaces and edges to be field welded, galvanized or finished metal surfaces unless otherwise indicated.

B. Remove scale, rust and other deleterious materials before applying shop coat. Clean off heavy rust and loose mill scale in accordance with SSPC SP-2 (Hand Tool Cleaning), SSPC SP-3 (Power Tool Cleaning) or SSPC SP-6 (Commercial Blast Cleaning). Omit blast cleaning for interior work.

C. Remove oil, grease and similar contaminants in accordance with SSPC SP-1 (Solvent Cleaning).

D. Interior Ferrous Items: Manufacturer's standard, fast curing, lead free, universal primer, selected for resistance to normal atmospheric corrosion, for compatibility with proposed finish paint systems and for capability to provide a sound foundation for field applied topcoats despite prolonged exposure; complying with performance requirements of FS TT-P-645. Use painting methods that will result in full coverage of joints, corners, edges and all exposed surfaces.

E. Apply one shop coat to fabricated metal items, except apply 2 coats of paint to surfaces inaccessible after assembly or erection. Change color of second coat to distinguish it from the first.

PART 3 - EXECUTION

3.1 INSPECTION

A. Installer must examine the areas and conditions under which work is to be installed and notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the erector.

3.2 PREPARATION

A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, such as concrete inserts, sleeves, anchor bolts and miscellaneous items having integral anchors, which are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.

3.3 INSTALLATION

A. Install miscellaneous metals in accordance with referenced standards and as shown on final approved shop drawings.

B. Install manufactured products in conformance with manufacturer's recommendations.

C. Cutting, Fitting and Placement:

1. Perform cutting, drilling and fitting required for the installation of the miscellaneous metal items. Set the work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Provide temporary bracing or anchors in form work for items which are to be built into concrete, masonry or similar construction.
2. Fit exposed connections accurately together to form tight hairline joints. Weld connections that are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind joints smooth and touch-up shop paint coat. Do not weld, cut or abrade the surfaces of units and components which are zinc coated, shop prime painted, or finish after fabrication or are intended for mechanical field connections or other means without further cutting or fitting.

D. Field Welding:

1. Comply with AWS Code for the procedures of manual shielded metal arc welding, the appearance and quality for welds made, and the methods used in correcting welding work. Use materials and methods that minimize distortion, develop strength, and corrosion resistance to base metals without undercut or overlap. Finish surfaces shall be left smooth and match contours of adjoining surfaces.

3.4 ADJUSTING, CLEANING AND PROTECTION

A. Restore finishes damaged during installation and construction period so that no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION 055010

SECTION 061000 - 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 DESCRIPTION OF WORK

A. Provide all plant, labor, materials, accessories, equipment and incidentals to complete rough carpentry work as required including, but not necessarily limited to, the following:

1. Temporary work.
2. Necessary tools, hoisting, scaffolding, etc.
3. Carpenters hardware.
4. Framing with dimensional lumber.
5. Wood blocking, cants, and nailers.
6. Plywood backing panels.
7. Framing, blocking and furring required to build in and support the work of other trades and other contracts.
8. All wood materials within concealed spaces shall be fire-retardant treated materials.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's specifications and installation instructions for materials listed below:

1. Wood Treatment Data: Submit treatment manufacturer's instructions for proper use of each type of treated material.
2. Pressure Treatment: For each type specified, include certification by treating plant stating chemicals and process used, net amount of preservative retained and conformance with applicable standards.
3. Fire-Retardant Treatment: Include certification by treating plant that treatment material complies with governing ordinances and that treatment will not bleed through finished surfaces.

1.4 QUALITY ASSURANCE

A. Lumber Standards: Comply with DOC PS 20 and with applicable rules of the respective grading and inspecting agencies for species and products indicated.

B. Plywood Product Standards: Comply with PS 1 (ANSI A 199.1) or, for products not manufactured under PS 1 provisions, with applicable APA Performance Standard for type of panel indicated.

C. Perform work in accordance with the best standards or practices relating to the trade and under the constant supervision of a competent foreman who shall carefully plan and lay out the work required to carry out the intent of the Drawings.

D. Preservative-treated wood: Lumber, plywood and other wood products shall comply with requirements of AWPA Standards for the species, product, preservative and end use.

1. Labeling: Preservative-treated lumber and wood structural panels shall bear the identification mark of an accredited inspection agency.

E. Fire–retardant treated wood: Wood products shall be impregnated with chemical by pressure process in accordance with AWPA C20 or AWPA C27 and when tested in accordance with ASTM E 84 shall have a flamespread rating of 25 or less and no evidence of significant progressive combustion when the test id continued for an additional 20 minute period. In addition, the flame front shall not progress more than 10.5 feet beyond the centerline of the burners at any time during the test.

1. Labeling: Fire retardant treated lumber and wood structural panels shall bear the identification mark of an approved independent testing agency.
2. Use Interior Type A, unless otherwise indicated.

1.5 PRODUCT HANDLING

A. Delivery and Storage: Keep materials dry at all times. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber and plywood, and provide air circulation within stacks.

1.6 JOB CONDITIONS

A. Coordination Fit carpentry work to other work; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow proper attachment of other work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Lumber, General: Factory-mark each piece of lumber with type, grade, species, moisture content at time of surfacing, mill and grading agency, except omit marking from surfaces to be exposed with transparent finish.

B. Nominal sizes are indicated, except as shown by detail dimensions.

C. Preservative Treated Wood: (PTW) Pressure treat the following items with water borne preservatives for above ground use, complying with AWPA:

1. Wood nailers, furring, lath, blocking, stripping, and similar members required in connections with roofing and flashing.
2. Wood blocking, furring, stripping and similar concealed members in contact with masonry, concrete, mineral fiber cement panels and steel.

D. Provide dressed lumber, S4S, unless otherwise indicated.

E. Provide lumber with 15% maximum moisture content at the time of dressing, unless otherwise indicated.

F. Dimensional lumber: Comply with ALSC National Grading Rule (NGR) provisions and provide framing of grade No. 2, and species of Hem Fir or Douglas Fir.

G. Construction Panels: Comply with PS 1 "U.S. Product Standard for Construction and Industrial Plywood" for plywood panels and, for products not manufactured under PS 1 provisions, with American Plywood Association (APA) "Performance Standard and Policies for Structural-Use Panels".

H. Concealed APA Performance-Rated Panels: Where construction panels will be used for the following concealed types of applications, provide APA Performance-Rated Panels complying with requirements indicated for the grade designation, span rating, exposure durability classification, edge detail and thickness.

1. Plywood Backing Panels: Provide fire-retardant treated plywood panels with grade designation, APA C-D PLUGGED INT with exterior glue, in thickness indicated, or, if not otherwise indicated, not less than 5/8", for mounting electrical or telephone equipment.

I. Exterior Wood Blocking: Southern Pine or Hem-Fir construction grade, pressure treated.

2.2 WOOD TREATMENT

A. Preservative Treatment: Where lumber or plywood is indicated as "Treated", or is specified herein to be treated, comply with applicable requirements of AWPA Standards C2 (Lumber) and C9 (Plywood) Standards listed below. Mark each treated item with the AWPA Quality Mark Requirements.

B. Pressure-treat above-ground items with water-borne preservative complying with AWPA. After treatment, kiln-dry to a maximum moisture content of 15%. Treat indicated items of the following:

1. Wood cants, nailers, curbs, blocking, stripping and similar members in connection with roofing, flashing, vapor retarders and waterproofing.

2. Wood sills, sleepers, blocking, furring, and similar concealed members in contact with masonry or concrete.

C. Complete fabrication of treated items prior to treatment, where possible. If cut after treatment, coat cut surfaces with heavy brush coat of same chemical used for treatment. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.

D. Fire-Retardant Treatment: All lumber within or on structure will comply with AWPA standards for pressure impregnation with fire-retardant chemicals, and which have a flame spread rating of not more than 25 when tested in accordance with UL Test 723 and ASTM E84, and show no increase in flame spread and significant progressive combustion upon continuation of test for additional 30 minutes.

E. Where treated items are exposed to exterior or to high humidities or are to have a transparent finish in form of stain or sealer, provide materials which show no change in fire-hazard classification when subjected to standard rain test (UL 790 or ASTM D 2898).

F. Use fire-retardant treatment, which will not bleed through or adversely affect type of finish indicated and which does not require brush treatment of field-make end cuts to maintain fire-hazard classification.

G. Kiln-dry treated items to maximum moisture content of 15%.

H. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

I. Provide UL label on each piece of fire-retardant lumber.

J. Inspect each piece of treated lumber or plywood after drying and discard damaged pieces.

2.3 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. Where 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 or Type 304 stainless steel.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: NES NER-272.

D. Wood Screws: ASME B18.6.1.

E. Screws for Fastening to Metal Framing: ASTM C 1002 or ASTM C 954, length as recommended by screw manufacturer for material being fastened.

F. Lag Bolts: ASME B18.2.1 (ASME B18.2.3.8M).

G. 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.

H. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 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).

2.4 METAL FRAMING ANCHORS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. KC Metals Products, Inc.
2. Simpson Strong-Tie Co., Inc.
3. USP Structural Connectors.

B. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 (Z180) coating designation.

1. Use for interior locations unless otherwise indicated.

C. Hot-Dip Heavy-Galvanized Steel Sheet: ASTM A 653/A 653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 (Z550) coating designation; and not less than 0.036 inch (0.9 mm) thick.

1. Use for wood-preservative-treated lumber and where indicated.

D. Stainless-Steel Sheet: ASTM A 666, Type 304 or Type 316.

1. Use for exterior locations and where indicated.

2.5 MISCELLANEOUS MATERIALS

A. 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).
2. 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."

B. Water-Repellent Preservative: NWWDA-tested and -accepted formulation containing 3-iodo-2-propynyl butyl carbamate, combined with an insecticide containing chloropyrifos as its active ingredient.

PART 3 - EXECUTION

3.1 INSPECTION

A. Installer must examine the substrate and conditions under which work is to be installed and notify the General Contractor in writing of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

3.2 INSTALLATION

A. Provide size of members not less than those indicated; do not exceed spacings indicated. Discard units of material with defects, which might impair quality of work, and units, which are too small to use in fabrication work with minimum joints or optimum joint arrangement.

B. Set carpentry work accurately to required levels and lines, with members plumb and true and accurately cut and fitted.

C. Fit Carpentry to other construction; scribe and cope as required for accurate fit. Correlate locations of furring, nailers, blocking, grounds and similar supports to allow attachment of other construction.

D. Securely attach carpentry work to substrate by anchoring and fastening as shown and as required by recognized standards. Countersink nail heads on exposed carpentry work and fill holes. Use common wire nails except use finishing nails for exposed work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; pre-drill as required. Use hot-dip galvanized or stainless-steel nails where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity.

E. Install wood framing in accordance with AFPA's "Manual for Wood Frame Construction" unless otherwise indicated. Notch members to fit wall plates and toe nail or use framing anchors. Double framing members to form headers and trimmers at openings in framing, if any, and support with metal hangers. Where framing abuts a ridge, place directly opposite each other and nail to ridge member or use metal ridge hangers. Provide double-valley rafters as shown, or if not shown, as the same thickness as regular rafters and 2 inches deeper. Bevel ends of jack

rafters for full bearing against valley rafters. Provide ties and special framing for eaves, overhangs and similar conditions as required.

F. Install construction panels in compliance with applicable recommendations contained in Form No. E 30D, "APA Design/Construction Guide - Residential & Commercial," for screw attachment of construction panels to framing and supports.

G. Cut blocking square on bearings, fit closely, set accurately to required lines and levels, secure rigidly in place.

H. Provide furring, blocking and nailers as necessary for the application of other materials or building items. Provide closure strips at edges of and opening in furring.

I. Unless otherwise indicated, secure blocking and nailers of 2" nominal thickness to masonry and concrete with not less than 3/8" diameter bolts or anchor bolts at not over 3' on center. Secure nailers over 2" nominal thickness with not less than 1/2" diameter bolts or anchor bolts at not over 4' on center, except as otherwise shown.

J. Provide not less than two fastenings per wood member. Where wood members are indicated to be fastened to concrete, set anchor bolts in concrete or provide drilled anchors with shields. Where wood members are indicated to be fastened to masonry, set suitable drilled-in expansion anchors or toggles. Wood members fastened to structural steel shall be bolted to steel on max. 36" centers, staggered each flange. Fasten blocking to light gauge steel framing with drywall screws on 16" centers per row, staggered.

K. Provide blocking of thickness to match roof insulation around perimeters of roofs, against parapets, equipment, curbs, walls. Comply with roofing manufacturer's recommendations. Obtain required height of blocking by using plywood and/or lumber of required thickness'. Furnish anchor bolts to mason for setting, 1/2" x minimum 5" penetration in masonry, 4'-0" o.c. maximum.

L. Comply with applicable recommendations of APA "Design/Construction Guide Residential and Commercial" for types of plywood products and applications indicated. Comply with FM 1-49 for attachment of nailer to masonry wall at roofs.

END OF SECTION 061000

SECTION 072102 - BUILDING 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 DESCRIPTION OF WORK

A. Provide all labor, materials, accessories, equipment, and incidentals to complete building insulation, as shown and/or specified including, but not necessarily limited to, the following:

1. Glass-fiber blanket sound insulation.
2. Miscellaneous insulation as required to provide / maintain thermal envelope
3. Safing Insulation.
4. Insulation support framing, fasteners and accessories.

B. Related Work Specified Elsewhere:

1. Gypsum Board Assemblies: Division 9.
2. Plumbing InsulationDivision 22.
3. HVAC Insulation Division 23.

1.3 DEFINITIONS

A. Mineral-Fiber Insulation: Insulation composed of rock-wool fibers, slag-wool fibers, or glass fibers; produced in boards and blanket with latter formed into batts (flat-cut lengths) or rolls.

1.4 PERFORMANCE REQUIREMENTS

A. Plenum Rating: Provide glass -fiber insulation where indicated in ceiling plenums whose test performance is rated as follows for use in plenums as determined by testing identical products per "Erosion Test" and "Mold Growth and Humidity Test" described in UL 181, or on comparable tests from another standard acceptable to authorities having jurisdiction.

1.5 SUBMITTALS

A. Product Data: Submit manufacturer's specifications and installation instructions for each type of insulation required.

1.6 QUALITY ASSURANCE

A. Fire Performance Characteristics: Provide insulation materials identical to those whose indicated fire performance characteristics have been determined per the ASTM test method indicated below, by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing and inspecting organization.

1. ASTM E 84: Surface Burning Characteristics.
2. ASTM E 119: Fire Resistance Ratings.
3. ASTM E 136: Combustion Characteristics.

B. Provide insulations composed of mineral fibers or mineral ores which contain no asbestos, of any type or mixture of types occurring naturally as impurities, as determined by polarized light microscopy test per appendix of 40 CFR 73.

C. Recycled Content: Provide glass-fiber insulation with recycled content so postconsumer recycled content plus one-half of pre-consumer recycled content is not less than (25) percent.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

B. Protect plastic insulation as follows:

1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
2. Protect against ignition at all times. Do not deliver plastic insulating materials to Project site before installation time.
3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

1.8 JOB CONDITIONS

A. Do not proceed with the installation of insulation until subsequent work that conceals the insulation is ready to be performed. Complete and conceal insulation as rapidly as possible.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified or approved equal.

    a. CertainTeed Corporation.
    b. Guardian Fiberglass, Inc.
    c. Johns Manville.
    d. Knauf Fiber Glass.
    e. Owens Corning.

2.2 GLASS-FIBER BLANKET INSULATION

A. Faced, Glass-Fiber Blanket Insulation at Exterior Stud Cavity Walls: ASTM C 665, Type III (blankets with reflective membrane facing), Class A (membrane-faced surface with a flame-spread index of 25 or less); Category 1 (membrane is a vapor barrier), faced with (foil-scrim-kraft) vapor-retarder membrane on 1 face.

B. Sound Attentuation Batts - Unfaced, Glass-Fiber Blanket Insulation ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread rating 25, smoke-developed rating 450 or less, passing ASTM E 136 for combustion characteristics.

1. Where sound attenuation insulation is indicated by the following thicknesses, provide blankets in batt or roll form with noise reduction criteria indicated:

    a. Installed within stud cavity with NRC of 1.00.

2.3 SEMI-REFRACTORY FIBER BOARD SAFING INSULATION

A. Semi-Refractory Fiber Board Safing Insulation: Semi-rigid boards designed for use as a fire stop at openings in deck flutes where fire rated walls go to underside of deck, produced by combining semi-refractory mineral fiber manufactured from slag with thermosetting resin binders to comply with ASTM C612, Class 1 and 2; nominal density of 4.0 p.c.f. passing ASTM E136 for combustion characteristics; R-value of 4.0 at 75° F (23.0° C).

B. Adhesive for Bonding Insulation: Type recommended by insulation manufacturer and complying with fire-resistance requirements.

2.4 AUXILIARY INSULATING MATERIALS

A. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by insulation manufacturers for sealing joints and penetrations in vapor-retarder facings.

B. Adhesive for Bonding Insulation: Product with demonstrated capability to bond insulation securely to substrates indicated without damaging insulation and substrates and recommended and by the insulation manufacturer for the intended use.

C. Insulation Fasteners: Product with demonstrated capability to fasten insulation securely to substrates indicated without damaging insulation and substrates and recommended and by the insulation manufacturer for the intended use.

PART 3 - EXECUTION

3.1 INSPECTION

A. Installer must examine substrate and conditions, under which insulation work is to be performed and must notify Contractor in writing of unsatisfactory conditions.

B. Do not proceed with insulation work until unsatisfactory conditions have been corrected in a manner acceptable to installer.

3.2 PREPARATION

A. Clean substrates of substances harmful to insulation or vapor retarders, including removing projections capable of puncturing vapor retarders or of interfering with insulation attachment.

3.3 INSTALLATION GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice, rain, and snow.

C. Extend insulation full thickness as shown over entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Apply a single layer of insulation of required thickness, unless otherwise shown or required to make up total thickness.

E. Water-Piping Coordination: If water piping is located within insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping.

F. For preformed insulating units, provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.4 INSTALLATION OF GENERAL BUILDING INSULATION

A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

B. Seal joints between foam-plastic insulation units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer.

C. Set vapor-retarder-faced units with vapor retarder to warm-in-winter side of construction, unless otherwise indicated.

1. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to surrounding construction to ensure airtight installation.

D. Install mineral-fiber insulation in cavities formed by framing members according to the following requirements:

1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.
2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
3. Maintain 3-inch (76-mm) clearance of insulation around recessed lighting fixtures.
4. For metal-framed wall cavities where cavity heights exceed 96 inches (2438 mm), support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.
5. For metal-framed wall cavities where cavity heights exceed 96 inches (2438 mm), support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.

E. Stuff glass-fiber loose-fill insulation into miscellaneous voids and cavity spaces where shown or where required to maintain thermal barrier. Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft. (40 kg/cu. m).

3.5 SAFING INSULATION

A. Install Safing Insulation to fill gap between deck and top of fire rated wall, penetrations and other applicable locations to maintain continuous fire resistance barrier. Cut safing insulation wider than gap to be filled to ensure compression fit and seal joint between insulation and edges deck and wall with caulking approved by safing insulation manufacturer for this purpose. Leave no voids in completed insulation.

3.6 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse

and cannot be concealed and protected by permanent construction immediately after installation.

B. Prior to final close-in of all insulated areas, inspect same for damage, removals, voids or other defects, repair and renew all such areas to original condition.

END OF SECTION 072102

SECTION 079200 - 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.

1.2 SUMMARY

A. This Section includes joint sealants for the following applications:

1. Interior joints in the following vertical surfaces and horizontal non-traffic surfaces:

a. Control and expansion joints on exposed interior surfaces of exterior walls.
b. Perimeter joints of exterior openings.
c. Vertical joints on exposed surfaces of interior unit masonry, concrete, walls and partitions.
d. Perimeter joints between interior wall surfaces of frames of interior doors, windows and elevator entrances.
e. Other joints as indicated.

2. Interior joints in the following horizontal traffic surfaces:

a. Isolation joints in cast-in-place concrete slabs.
b. Control and expansion joints in flooring.
c. Other joints as indicated.

B. Interior control and expansion joints in masonry.

C. Interior building, wall and partition joints, including (but not limited to) concrete to concrete, concrete to masonry, masonry to masonry, masonry to metal, masonry to steel, plaster to plaster, masonry to plaster and plaster to metal, masonry to drywall, plaster to drywall, metal to drywall, drywall to drywall. Include running and bed joints in all sills. Metal shall be understood to include (but not limited to) door, window, louver, lockers, access panels, fire extinguisher cabinets, and other metal frames.

D. All interior joints where plaster, drywall and the like terminates at dissimilar materials or assemblies where an open joint exists.

E. Control joints in flooring.

F. Perimeter of frames (door, window and louver frames, access panels, fire extinguisher cabinets, etc.) which adjoin exposed interior masonry and tile surfaces and similar surfaces.

1.3 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.

C. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.

1.6 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.7 WARRANTY

A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from natural causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Architectural Sealants: 250 g/L.
2. Sealant Primers for Nonporous Substrates: 250 g/L.
3. Sealant Primers for Porous Substrates: 775 g/L.

C. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

1. Suitability for Immersion in Liquids. Where sealants are indicated for Use I for joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C 1247. Liquid used for testing sealants is deionized water, unless otherwise indicated.

D. Stain-Test-Response Characteristics: Where sealants are specified to be non-staining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

E. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 50, for Use NT. Use at vertical surfaces and non-traffic horizontal surfaces, such as, but not limited to, joints of exterior and interior precast panel joints, and exterior frames of windows, doors and louvers.

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. BASF Building Systems; Omniseal 50.
    b. Dow Corning Corporation; 791
    c. GE Advanced Materials – Silicones; SilPruf SCS2000
    d. Pecora Corporation; 895.
    e. Tremco Incorporated; Spectrem 2.

2.3 LATEX JOINT SEALANTS

A. Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF. General purpose.

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. BASF Building Systems; Sonolac.
    b. Pecora Corporation; AC-20+.
    c. Tremco Incorporated; Tremflex 834.

2. ASTM C 834, Type and Grade: Type P, Grade NF.
3. Class: 7.5/7.5
4. Use Related to Exposure: General Purpose interior and exterior with slight to moderate movement.

2.4 JOINT SEALANT BACKING

A. General: Provide sealant backings of material that are non-staining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, Type B (bicellular material with a surface skin) of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F. Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and to otherwise contribute to optimum sealant performance.

D. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.5 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Non-staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Remove laitance and form-release agents from concrete.

3. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

    a. Metal.
    b. Glass.
    c. Glazed surfaces of ceramic tile.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

3.4 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal non-traffic surfaces.

1. Joint Locations:

    a. Control and expansion joints on exposed interior surfaces of exterior walls.
    b. Perimeter joints of exterior openings where indicated.
    c. Vertical joints on exposed surfaces of interior partitions.
    d. Perimeter joints between interior wall surfaces and frames of interior doors.
    e. Other joints as indicated.

2. Joint Sealant: Latex or Acrylic based.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

B. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal non-traffic surfaces.

1. Joint Sealant Location:

    a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
    b. Other joints as indicated.

2. Joint Sealant: Mildew resistant, single component, nonsag, neutral curing, Silicone.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION 079200

SECTION 081113 – HOLLOW METAL FRAMES

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. Provide all labor, materials, accessories, equipment and incidentals to complete steel door and frame work as shown and/or specified, including but not necessarily limited to the following:

1. Interior hollow metal frames
2. Vision Panels.
3. Preparation for Hardware.
4. Interface Coordination to Work of Other Trades.

1.3 SUBMITTALS

A. Product Data: Include construction details, material descriptions, core descriptions, label compliance, fire-resistance and temperature-rise ratings, and finishes for each type of steel door and frame specified.

B. Shop Drawings: In addition to requirements below, provide a schedule of standard steel doors and frames using same reference numbers for details and openings as those on Drawings:

1. Elevations of each door design.
2. Details of doors, including vertical and horizontal edge details.
3. Frame details for each frame type, including dimensioned profiles.
4. Details and locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of anchorages, accessories, joints, and connections.
7. Details of glazing frames and stops showing glazing.

C. Coordination Drawings: Drawings of each opening, including door and frame, drawn to scale and coordinating door hardware. Show elevations of each door design type, showing dimensions, locations of door hardware, and preparations for any power, signal, and electrified and/or pneumatic control systems as required.

D. Door Schedule: Submit schedule of doors and frames using same reference numbers for details and openings as those on the Contract Drawings. Coordinate with flush wood doors, finish hardware, glass and glazing work.

E. Submit certification of compliance for the following prior to fabrication:

1. Phosphate conversion coat and primer.
2. Performance requirements.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

B. Source Limitations: Obtain standard steel doors and frames through one source from a single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver doors and frames in accordance with manufacturer's written requirements and palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use non-vented plastic.

B. Store doors and frames under cover at Project site in accordance with manufacturer's written requirements. Place units in a vertical position with heads up, spaced by blocking, on minimum 4-inch high wood blocking. Avoid using non-vented plastic or canvas shelters that could create a humidity chamber.

1. If wrappers on doors become wet, remove cartons immediately. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify openings by field measurements before fabrication and indicate measurements on Shop Drawings.

1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish opening dimensions and proceed with fabricating standard steel frames without field measurements. Coordinate wall construction to ensure that actual opening dimensions correspond to established dimensions.

1.7 COORDINATION

A. Coordinate installation of anchorages for standard steel frames. 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 and/or masonry. Deliver such items to Project site in time for installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, manufacturers of products that may be acceptable for inclusion in the work include, but are not limited to, the following:

1. Curries Company
2. Pioneer Industries
3. Republic Builders Products Company.
4. Steelcraft
5. or other equivalent SDI manufacturer

B. Source Limitations: Obtain hollow-metal work from single source from single manufacturer.

2.2 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008, Commercial Steel (CS), Type B, suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A 1011, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled, only for reinforcements and other internal components not exposed to view.

C. Supports and Anchors: After fabricating, galvanize units to be built into exterior walls according to ASTM A 153, Class B.

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. density; with maximum flame-spread and smoke-developed indexes of 25 and 50 respectively; passing ASTM E 136 for combustion characteristics.

E. Glazing: Comply with requirements in Division 08 Section on Glazing.

2.3 STEEL FRAMES

A. General: Comply with ANSI A250.8 and with details indicated for type and profile.

B. Interior Frames: Fabricated from cold-rolled steel sheet, unless otherwise indicated to comply with exterior frame requirements.

1. Fabricate frames with mitered or coped and welded face corners and seamless face joints, unless otherwise indicated.
2. Frames for Level 2 Steel Doors: 0.053-inch thick steel sheet.
3. Frames for Wood Doors: 0.053-inch thick steel sheet.
4. Frames for Borrowed Lights: 0.053-inch thick steel sheet.

C. Hardware Reinforcement: Fabricate reinforcement plates from same material as frames to comply with the following minimum sizes:

1. Hinges: Minimum 0.123 inch thick by 1-1/2 inches wide by 6 inches longer than hinge, secured by not less than 6 spot welds.
2. Lock Face, Flush Bolts, Closers, and Concealed Holders: Minimum 0.067 inch thick.
3. All Other Surface-Mounted Hardware: Minimum 0.067 inch thick.

D. Supports and Anchors: Fabricated from electrolytic zinc-coated or metallic-coated steel sheet.

E. Floor Anchors: Formed from same material as frames, not less than 0.042 inch thick, and as follows:

1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

F. Fabricate concealed stiffeners and hardware reinforcement from either cold-rolled or hot-rolled steel sheet.

G. Plaster Guards: Formed from same material as frames, not less than 0.016-inch thick.

2.4 FABRICATION

A. General: Fabricate standard steel doors and frames 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. Steel 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. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners, unless otherwise indicated.
3. Plaster Guards: Weld guards to frame at back of hardware mortises in frames installed in concrete or masonry.
4. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.

5. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers as follows. Provide plastic plugs to keep holes clear during construction.

    a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.

C. Hardware Preparation: Factory prepare standard steel doors and frames to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping, according

to the Door Hardware Schedule and templates furnished as specified in Division 8 Section "Door Hardware."

1. Reinforce doors and frames to receive non-templated mortised and surface-mounted door hardware.
2. Comply with applicable requirements in ANSI A250.6 and ANSI/DHI A115 Series specifications for door and frame preparation for hardware. Locate hardware as indicated on Shop Drawings or, if not indicated, according to ANSI A250.8.

2.5 STEEL FINISHES

A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

1. Finish standard steel door and frames after assembly.

B. Metallic-Coated Steel Surface Preparation: Clean surfaces with nonpetroleum solvent so surfaces are free of oil and other contaminants. After cleaning, apply a conversion coating suited to the organic coating to be applied over it. Clean welds, mechanical connections, and abraded areas, and apply galvanizing repair paint specified below to comply with ASTM A 780.

C. Steel Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning"; remove dirt, oil, grease, or other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel; comply with SSPC-SP 3, "Power Tool Cleaning," or SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."

D. Factory Priming for Field-Painted Finish: Apply shop primer specified below immediately after surface preparation and pretreatment. Apply a smooth coat of even consistency to provide a uniform dry film thickness of not less than 0.7 mils.

1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied finish paint system indicated; and providing a sound foundation for field-applied topcoats despite prolonged exposure.

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 steel doors and frames.

1. Examine roughing-in for embedded and built-in anchors to verify actual locations of standard steel frame connections before frame installation.

2. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove welded-in shipping spreaders installed at factory.

B. Prior to installation and with installation spreaders in place, adjust and securely brace steel door frames for square, alignment, twist, and plumb.

C. Drill and tap frames to receive non-template mortised and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Provide frames of sizes, thickness, and designs indicated. Install standard steel doors and frames plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

B. Steel Frames: Install standard steel frames for doors, sidelights, transoms, borrowed lights, and other openings, of size and profile indicated. Comply with SDI 105.

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. Where frames are fabricated in sections due to shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
    b. Install frames with removable glazing stops located on secure side of opening.
    c. Install door silencers in frames before grouting.
    d. Remove temporary braces necessary for installation only after frames have been properly set and secured.
    e. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor and secure with post-installed expansion anchors.
3. Ceiling Struts: Extend struts vertically from top of frame at each jamb to supporting construction above, unless frame is anchored to masonry or to other structural support at each jamb. Bend top of struts to provide flush contact for securing to supporting construction above. Provide adjustable wedged or bolted anchorage to frame jamb members.
4. Installation Tolerances: Adjust standard steel door frames for square, alignment, twist, and plumb to the following tolerances:

a. Square: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
d. Plumb: Plus or minus 1/16 inch, measured at jambs at floor.

C. Door Openings: Fit doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Doors:

a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

D. Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with standard steel door and frame manufacturer's written instructions.

1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c., and not more than 2 inches o.c. from each corner.

3.4 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 standard steel frames that are warped, bowed, or otherwise unacceptable.

B. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.

END OF SECTION 081113

SECTION 081416 - 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 hardboard faces.
2. Factory finishing flush wood doors.
3. Factory fitting flush wood doors to frames and factory machining for hardware.

B. Related Requirements:

1. Section 081213 “Hollow Metal Frames”.
2. Section 087100 “Door Hardware”.
3. Section 088000 "Glazing".
4. Section 099000 “Painting and Coating”.

C. Standards and References: Comply with the version year adopted by the Authority Having Jurisdiction:

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ANSI A208.1 – Wood Particleboard.
3. Intertek Testing Service (ITS Warnock Hersey) - Certification Listings for Fire Doors.
4. NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association.
5. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association.
6. UL 10C - Positive Pressure Fire Tests of Door Assemblies; UL 1784 - Standard for Air Leakage Tests of Door Assemblies.
7. Window and Door Manufacturers Association - WDMA I.S.1-A Architectural Wood Flush Doors.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of door. Include details of core and edge construction, louvers, vision panels. Reinforcement blocking for hardware and trim for openings.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; and the following:

1. Dimensions and locations of blocking.
2. Dimensions and locations of mortises and holes for hardware.
3. Dimensions and locations of cutouts.
4. Undercuts.
5. Requirements for veneer matching.
6. Doors to be factory finished and finish requirements.
7. Fire-protection ratings for fire-rated doors.

C. Shop drawing schedules shall list door numbers identical to those shown on the Architectural drawings.

D. Certification: On door manufacturer’s letterhead stating that all blocking required for scheduled hardware is provided in each door, of the proper dimension, to properly receive scheduled hardware provided.

E. Samples for Verification:

1. 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. Finish veneer-faced door Samples with same materials proposed for factory-finished doors, including indicated stain / finish colors.

2. Frames for light openings, 6 inches long, for each material, type, and finish required.

1.4 INFORMATIONAL SUBMITTALS

A. Warranty: Provide sample of manufacturer’s warranty.

B. Quality Standard Compliance Certificates: AWI Quality Certification and/or WI Certified Compliance Program certificates.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain flush wood doors through one source from a single manufacturer wherever possible.

B. Comply with the requirements of the following:

1. N.F.P.A. National Fire Protection Association
2. W.D.M.A. Wood Door Manufacturers Association
3. U.L. Underwriters' Laboratory, Inc.
4. W.H.I. Warnock Hersey International

C. Vendor Qualifications: A vendor that is certified for chain of custody by an FSC-accredited certification body.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in cardboard cartons and wrap bundles of doors in plastic sheeting.

C. Mark each door on top and bottom rail with opening number used on Shop Drawings.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during remainder of construction period.

1.8 WARRANTY

A. Special Warranty: 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. 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 requirement, available manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:

1. Algoma Hardwoods, Inc.
2. Marshfield Door Systems.
3. Graham Wood Doors, an Assa Abloy Group Company (Basis of Design).
4. VT Industries.

B. Source Limitations: Obtain flush wood doors from single manufacturer.

2.2 FLUSH WOOD DOORS, GENERAL

A. Quality Standard: In addition to requirements specified, comply with WDMA I.S.1-A, "Architectural Wood Flush Doors."

1. Provide Labels indicating that doors comply with requirements of grades specified.

B. Low-Emitting Materials: Fabricate doors with adhesives and composite wood products that do not contain urea formaldehyde.

C. WDMA I.S.1-A Performance Grade:

1. Extra Heavy Duty, Aesthetic Grade Premium

D. Particleboard-Core Doors:

1. Particleboard: ANSI A208.1, Grade LD-2, made with binder containing no urea-formaldehyde.
2. Blocking: Provide wood blocking in particleboard-core doors as needed to eliminate through-bolting hardware.

    a. 7-inch top-rail blocking, in doors indicated to have closers.
    b. 5-inch bottom-rail blocking, in exterior doors and doors indicated to have kick, mop, or armor plates.
    c. (2) 5-inch midrail blocking, in doors indicated to have exit devices.

3. Provide doors with glued-wood-stave or structural-composite-lumber cores instead of particleboard cores for doors indicated to receive exit devices.

2.3 VENEER-FACED DOORS FOR TRANSPARENT FINISH

A. Interior Solid-Core Doors:

1. Grade: Premium, with Grade A faces.
2. Species: Walnut with clear stain / finish.
3. Cut: Plain sliced.
4. Match between Veneer Leaves: book match.
5. Assembly of Veneer Leaves on Door Faces: Center-balance match.
6. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
7. Exposed Vertical and Top Edges: Same species as faces - edge Type A.
8. Core: Particleboard compliant with ANSI A208.1, Grade 1-LD-2

    a. Non-rated doors: either glued wood stave or structural composite lumber.

9. Construction: Five or seven plies. Stiles and rails are bonded to core, then entire unit is abrasive planed before veneering. Faces are bonded to core using a hot press.
10. WDMA I.S.1-A Performance Grade: Extra Heavy Duty.
11. Veneer minimum 1/50 inch (0.5mm) thickness at moisture content of 12% or less.

2.4 FABRICATION

A. 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, BHMA-156.115-W, and hardware templates.

1. Coordinate with hardware mortises in metal frames to verify dimensions and alignment before factory machining.
2. Comply with tolerance requirements of NWWDA and NFPA 80 for pre-fitting. Machine doors for hardware requiring cutting of doors. Comply with final hardware templates and wood and hollow metal frame shop drawings and with hardware templates and other essential information required ensuring proper fit of doors and hardware.
3. A plus or minus 1/32" will be allowed on all hardware locations. A plus 1/32" minus 1/64" tolerance will be allowed on lock front preparation cutouts.

B. Openings: Factory cut and trim openings through doors.

1. Light Openings: Trim openings with moldings of material and profile indicated.
2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Section 088000 "Glazing."

C. Electrified Openings: Doors shall be pre-wired with sufficient number of concealed wires to accommodate electric function of specified hardware. Provide Molex type standardized plug in connectors to accommodate up to twelve wires.

2.5 SHOP PRIMING

A. Doors for Transparent Finish: Shop prime faces and all four edges with stain (if required), other required pretreatments, and first coat of finish. Seal edges of cutouts and mortises with first coat of finish.

2.6 FACTORY FINISHING

A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.

1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises.

B. Factory finish doors.

C. Transparent Finish:
   1. Grade: Premium.
   2. Finish: AWI catalyzed polyurethane for oak, birch and maple systems.
   3. Finish: WDMA TR-6 catalyzed polyurethane.
   4. Staining: As selected by Architect from manufacturer's full range.
   5. Effect: Semi-filled finish, produced by applying an additional finish coat to partially fill the wood pores.
   6. Sealer – 3 coats; sand; Topcoat – 2 coats.
   7. Sheen: Satin.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and installed door frames, with Installer present, before hanging doors.

   1. Verify that installed 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 Section 087100 "Door Hardware."

B. Installation Instructions: Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.

   1. Install fire-rated doors according to NFPA 80.

C. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.

   1. Clearances: Provide 1/8 inch at heads, jambs, and between pairs of doors. Provide 1/8 inch from bottom of door to top of decorative floor finish or covering unless otherwise indicated. Where threshold is shown or scheduled, provide1/4 inch from bottom of door to top of threshold unless otherwise indicated.

      a. Comply with NFPA 80 for fire-rated doors.

   2. Bevel non-fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) at lock and hinge edges.
   3. Bevel fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) at lock edge; trim stiles and rails only to extent permitted by labeling agency.

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 081416

SECTION 083113 - ACCESS DOORS AND FRAMES

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. Access doors and frames for walls and ceilings.
2. Contractor to provide access doors at all locations where controls, valves, shut offs or other access to mechanical and electrical work is indicated or required by Authorities Having Jurisdiction.
3. Access doors and frames shall be factory primed and field painted to match adjacent surfaces (walls, ceilings, etc…).

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, fire ratings, materials, individual components and profiles, and finishes.

B. Shop Drawings:

1. Include plans, elevations, sections, details, and attachments to other work.
2. Detail fabrication and installation of access doors and frames for each type of substrate.

C. Product Schedule: Provide complete access door and frame schedule, including types, locations, sizes, latching or locking provisions, and other data pertinent to installation.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in manufacturer’s original unopened packaging, clearly and legibly identifying product and components.

B. Thoroughly inspect products upon delivery for damage. Minor damages may be repaired provided finish items are equal in all respects to new work and acceptable to Architect; otherwise, remove and replace damaged items as directed.

C. Store materials in accordance with manufacturer’s written instructions and in a dry, protected, well ventilated place, under cover, out of direct sunlight. Unless otherwise required by the manufacturer, place units in a horizontal position with top up, spaced by blocking on wood sills

at least 4" high, or by other means approved by the manufacturer that will prevent rust and damage. Avoid use of non-vented plastic or canvas shelters that could create humidity chamber. Provide 1/4" spaces between each stacked unit to promote air circulation.

D. Remove any protective wrapping immediately after installation.

1.5 PROJECT CONDITIONS

A. Coordinate with other trades for installing frame and verify that other trades with related work are complete prior to installing floor access doors.

B. Mounting surfaces shall be straight, plumb, secure and of proper dimensions.

1.6 QUALITY ASSURANCE

A. Fire-Rated Access Doors and Frames: Units complying with NFPA 80 that are identical to assemblies tested for fire-test-response characteristics per the following test method and that are listed and labeled by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

1. NFPA 252 or UL 10B for vertical access doors and frames.

B. Provide all access door and frame components and assemblies manufactured by the same company to ensure compatibility of color, appearance and physical properties.

1.7 COORDINATION

A. Verification: Determine specific locations and sizes for access doors needed to gain access to concealed plumbing, mechanical, or other concealed work, and indicate in the schedule specified in "Submittals" Article.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Rated Access Doors and Frames: Units complying with NFPA 80 that are identical to access door and frame assemblies tested for fire-test-response characteristics according to the following test method and that are listed and labeled by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

1. NFPA 252 or UL 10B for fire-rated access door assemblies installed vertically.
2. NFPA 288 for fire-rated access door assemblies installed horizontally.

2.2 STEEL MATERIALS

A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

1. ASTM A 123/A 123M, for galvanizing steel and iron products.
2. ASTM A 153/A 153M, for galvanizing steel and iron hardware.

B. Steel Sheet: Electrolytic zinc-coated, ASTM A 591/A 591M with cold-rolled steel sheet substrate complying with ASTM A 1008/A 1008M, Commercial Steel (CS), exposed.

C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS) with G60 (Z180) mill-phosphatized zinc coating.

D. Steel Finishes: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

1. Field Paint Finish to match adjacent surfaces.

E. Drywall Beads: 0.0299-inch (0.76-mm) zinc-coated steel sheet to receive joint compound.

F. Manufacturer's standard finish.

2.3 ACCESS DOORS AND FRAMES FOR WALLS AND CEILINGS

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, or approved equal:

1. Acudor Products, Inc.
2. Babcock-Davis; A Cierra Products Co.
3. Bar-Co, Inc. Div.; Alfab, Inc.
4. Nystrom, Inc.

C. Fire-Rated, Insulated, Flush Access Doors and Frames with Exposed Trim: Fabricated from metallic-coated steel sheet.

1. Locations: Wall surfaces.
2. Fire-Resistance Rating: Not less than that of adjacent construction (1 hour wall construction.
3. Temperature Rise Rating: 250 deg F (139 deg C) at the end of 30 minutes.
4. Door: Flush panel with a core of mineral-fiber insulation enclosed in sheet metal with a minimum thickness of [0.036 inch (0.9 mm).
5. Frame: Minimum 0.060-inch- (1.5-mm-) thick sheet metal with 1-inch- (25-mm-) wide, surface-mounted trim.
6. Hinges: Continuous piano.
7. Automatic Closer: Spring type.

8. Latch: Self-latching device operated by flush key with interior release.

D. Flush Access Doors with Exposed Flanges:

1. Basis-of-Design Product: Acudor UF-5000.
2. Assembly Description: Fabricate door to fit flush to frame. Provide manufacturer's standard-width exposed flange, proportional to door size.
3. Locations: Wall and ceiling.
4. Door Size: Min. 12”x12” or as indicated on drawings.
5. Metallic-Coated Steel Sheet for Door: Nominal, 16 gage.

    a. Finish: Factory prime.

6. Frame Material: Same material, thickness, and finish as door.
7. Hinges: Manufacturer's standard.
8. Hardware: Lock.

E. Fire-Rated, Flush Access Doors with Exposed Flanges:

1. Basis-of-Design Product: Acudor FW-5050.
2. Assembly Description: Fabricate door to fit flush to frame, with a core of mineral-fiber insulation enclosed in sheet metal. Provide self-latching door with automatic closer and interior latch release. Provide manufacturer's standard-width exposed flange, proportional to door size.
3. Locations: Wall and ceiling.
4. Door Size: Min. 12”x12” or as indicated on drawings.
5. Fire-Resistance Rating: Not less than that of adjacent construction.
6. Temperature-Rise Rating: 250 deg F at the end of 30 minutes.
7. Metallic-Coated Steel Sheet for Door: Nominal, 20 gage.

    a. Finish: Factory prime.

8. Frame Material: Same material and finish as door, nominal 16 gage.
9. Hinges: Manufacturer's standard.
10. Hardware: Prep for rim or mortised cylinder.

2.4 FABRICATION

A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.

B. Metal Surfaces: For metal surfaces exposed to view, provide materials with smooth, flat surfaces without blemishes.

C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access panels to types of supports indicated.

D. Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed.

1. For cylinder lock, furnish two keys per lock and key all locks alike.

2.5 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Steel and Metallic-Coated-Steel Finishes:

1. Factory Prime: Apply manufacturer's standard, fast-curing, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with manufacturer's written instructions for installing access doors and frames.

B. Set frames accurately in position and attach securely to supports with plane of face panels aligned with adjacent finish surfaces.

C. Install doors flush with adjacent finish surfaces or recessed to receive finish material.

3.2 ADJUSTING AND CLEANING

A. Adjust doors and hardware after installation for proper operation.

B. Remove and replace doors and frames that are warped, bowed, or otherwise damaged.

END OF SECTION 083113

SECTION 084126 - ALL-GLASS 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:

1. All-glass sidelights

B. Related Requirements:

1. Section 055010 "Miscellaneous Metals" for overhead-steel support for all-glass systems.

1.3 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 all-glass system.

B. Shop Drawings: For all-glass entrances and storefronts.

1. Include plans, elevations, and sections.
2. Include details of fittings and glazing.

C. Samples for Verification: For each type of exposed finish indicated, prepared on Samples of size indicated below.

1. Metal Finishes: 6-inch- (150-mm-) long sections of accessory fittings, and other items.
2. Glass: 6 inches (150 mm) square, showing exposed-edge finish.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Field quality-control reports.

C. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For all-glass systems to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Testing Agency Qualifications: Qualified according to ASTM E 699 for testing indicated.

C. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.

1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.7 WARRANTY

A. Special Warranty: Installer agrees to repair or replace components of all-glass systems that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including excessive deflection.
b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
c. Failure of operating components.

2. Warranty Period – 10 years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Blumcraft of Pittsburgh

B. CRL Architectural Products

C. JE Berkowitz

2.2 METAL COMPONENTS

A. Fitting Configuration:

1. All-Glass Storefronts: Continuous rail fitting at top and bottom

B. Patch Fittings: Aluminum.

C. Rail Fittings:

1. Material: Aluminum.
2. Height:

a. Top Rail: 2” maximum.
b. Bottom Rail: 1” maximum

3. Profile: Square
4. End Caps: Manufacturer's standard precision-fit end caps for rail fittings.

D. Accessory Fittings: Match patch- and rail-fitting metal and finish for the following:

1. Glass-support-fin brackets.

E. Anchors and Fastenings: Concealed.

F. Materials:

1. Aluminum: ASTM B 221 (ASTM B 221M), with strength and durability characteristics of not less than Alloy 6063-T5.

a. Color: Clear Anodized.

2.3 GLASS

A. Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated surfaces), Type I (transparent), tested for surface and edge compression per ASTM C 1048 and for impact strength per 16 CFR 1201 for Category II materials.

1. Class 1: Clear monolithic.

a. Thickness: 1/2 inch (13 mm)

2. Edges: Machine ground and flat polished.
3. Corner Edges: Lap-joint corners with exposed edges polished.

2.4 SEALANTS

A. Single-Component, Nonsag, Acid-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Uses NT, G, and A.

2.5 FABRICATION

A. Provide holes and cutouts in glass to receive hardware, fittings, and accessory fittings before tempering glass. Do not cut, drill, or make other alterations to glass after tempering.

1. Fully temper glass using horizontal (roller-hearth) process, and fabricate so that when glass is installed, roll-wave distortion is parallel with bottom edge of door or lite.

B. Factory assemble components and factory install hardware and fittings to greatest extent possible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install all-glass systems and associated components according to manufacturer's written instructions.

B. Set units level, plumb, and true to line, with uniform joints.

C. Maintain uniform clearances between adjacent components.

3.3 ADJUSTING AND CLEANING

A. Remove excess sealant and glazing compounds and dirt from surfaces.

END OF SECTION 084126

SECTION 085652 - TRANSACTION WINDOWS

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. Sliding, transaction security windows.

1.3 COORDINATION

A. Coordinate installation of anchorages for security windows. 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 adjacent construction. Deliver such items to Project site in time for installation.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, weights and finishes for window units.

B. Shop Drawings: For security windows.

1. Include plans, elevations, sections, and attachment details.
2. Full-size section details of framing members, including internal armoring, reinforcement, and stiffeners.
3. Location of weep holes.
4. Hardware for sliding window units.
5. Glazing details.
6. Details of transaction counter

C. Samples for Initial Selection: For frame members with factory-applied color finishes.

D. Samples for Verification: For each type of exposed finish required, prepared on Samples of sizes indicated below:

1. Framing: 12-inch- (305-mm-) long sections of frame members.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Field quality-control reports documenting inspections of installed products.

1. Field quality-control certification signed by Contractor.

C. Sample Warranty: For special warranty.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer for installation of units required for this Project.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Pack security windows in wood crates for shipment. Crate glazing separate from frames unless factory glazed.

B. Label security window packaging with drawing designation.

C. Store crated security windows on raised blocks to prevent moisture damage.

1.8 FIELD CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.9 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace security windows that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including deflections exceeding 1/4 inch (6 mm).
b. Failure of welds.
c. Excessive air leakage.
d. Faulty operation of sliding window hardware.
e. Faulty operation of transaction drawers.
f. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

2. Warranty Period: Three years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SLIDING, TRANSACTION SECURITY WINDOWS

A. Provide sliding, transaction security windows.

1. Ready Access (Basis of Design)
2. Kreiger Specialty Products
3. Quikserv Corp.

B. Basis of Design Product: Ready Access 275 Single Panel Pass-Thru Window.

C. Size: 50” high nominal x 58” wide nominal

D. Configuration: One fixed-glazed panel and one horizontal-sliding glazed panel

E. Operation: Manual open/self-closing.

F. Framing: Fabricate perimeter framing, mullions, and glazing stops from aluminum as follows:

1. Profile: Manufacturer's standard, with minimum face dimension indicated.

a. Minimum Face Dimension: 2 inches (50 mm)

2. Depth: Manufacturer's standard

Retain subparagraph below if required.

G. Head and Jamb Framing: Designed for gasket glazing. Removable header access panel on secure side.

H. Door Type: Sliding, 1 door panel.

I. Opening Direction: Right to left. Customer View – Outside.

J. Frame: Extruded aluminum, ASTM B 221, Alloy 6063-T6 and 6063-T52.

K. Aluminum Sheet: ASTM B 209, Alloy 5005-AQ-H34.

L. Galvanized Steel Sheet: ASTM A 653, G90.

M. Bottom Sill: Angled downward, track-free.

N. Security: Automatically locks each time door closes. Security bar set.

O. Security Lock: Aluminum bar extrusion with sliding spring-loaded locking clip.

P. Fasteners: Stainless steel rivets and hex-head zinc-plated self-threading machine screws.

Q. Handle: Black Delrin handle with pressed-in stainless steel spring pins. Stainless steel handle mounting bracket. Stainless steel spring-loaded mounting base.

R. Glazing: 1/4-inch tempered glass, ASTM C 1048, clear.

S. Silicone Glazing Sealant.

T. Sliding Window Hardware: Provide roller track designed for overhead support of manufacturer's standard carrier supporting horizontal-sliding glazed panel with manufacturer's standard self-closing mechanism mounted in header. Provide self-latching and self-locking pull and lock with two keys for each horizontal-sliding glazed panel.

U. Materials:

1. Mild Steel Plates, Shapes, and Bars: ASTM A36/A36M.
2. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, CS (Commercial Steel), Type B; suitable for exposed applications.
3. Metallic-Coated Steel Sheet: ASTM A653/A653M, CS (Commercial Steel), Type B; with G60 (Z180) zinc (galvanized) or A60 (ZF180) zinc-iron-alloy (galvannealed) coating designation.
4. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, CS (Commercial Steel), Type B; free of scale, pitting, or surface defects; pickled and oiled.
5. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A666 or ASTM A240/A240M, austenitic stainless steel, Type 304
6. Aluminum Extrusions: ASTM B221 (ASTM B221M). Provide alloy and temper recommended by manufacturer for strength, corrosion resistance, and application of required finish, but not less than 22,000-psi (150-MPa) ultimate tensile strength.
7. Aluminum Sheet and Plate: ASTM B209 (ASTM B209M).

2.2 FABRICATION

A. General: Fabricate security windows to provide a complete system for assembly of components and anchorage of window units.

1. Provide units that are reglazable from the secure side without dismantling the attack side of framing.

B. Framing: Miter or cope corners the full depth of framing; weld and dress smooth.

1. Fabricate framing with manufacturer's standard, internal opaque armoring in thicknesses required for security windows to comply with ballistics-resistance performance indicated.

C. Glazing Stops: Finish glazing stops to match security window framing.

1. Attack-Side (Exterior) Glazing Stops: Welded or integral to framing.
2. Secure-Side (Interior) Glazing Stops: Removable, coordinated with glazing indicated.

D. Welding: Weld components to comply with referenced AWS standard. To greatest extent possible, weld before finishing and in concealed locations to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

E. Metal Protection: Separate dissimilar metals to protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.

2.3 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM/NOMMA 500 for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.4 ALUMINUM FINISHES

A. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker.

1. Color: As selected by Architect from full range of industry colors and color densities.

2.5 STAINLESS-STEEL FINISHES

A. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.

B. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.

1. Run grain of directional finishes with long dimension of each piece.
2. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
3. Directional Satin Finish: No. 4.

2.6 ACCESSORIES

A. Glazing Strips and Weather Stripping: Manufacturer's standard replaceable components.

1. Compression Type: Molded EPDM or neoprene gaskets complying with ASTM D2000, Designations 2BC415 to 3BC620; molded PVC gaskets complying with ASTM D2287; or molded, expanded EPDM or neoprene gaskets complying with ASTM C509, Grade 4.

2. Sliding Type: AAMA 701/702, made of wool, polypropylene, or nylon woven pile with nylon-fabric backing.

B. Miscellaneous Glazing Materials: Provide material, size, and shape complying with requirements of glass manufacturers and with a proven record of compatibility with surfaces contacted in installation.

1. Cleaners, Primers, and Sealers: Type recommended by sealant or gasket manufacturer.
2. Setting Blocks: Elastomeric material with a Shore A durometer hardness of 85, plus or minus 5.
3. Spacers: Elastomeric blocks or continuous extrusions with a Shore A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
4. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

C. Anchors, Clips, and Window Accessories: Stainless steel; hot-dip, zinc-coated steel or iron, complying with ASTM B633; provide sufficient strength to withstand design pressures indicated.

D. Sealants: For sealants required within fabricated security windows, provide type recommended by manufacturer for joint size and movement. Sealant shall remain permanently elastic, nonshrinking, and nonmigrating.

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 security windows.

B. Examine roughing-in for embedded and built-in anchors to verify actual locations of security window connections before security window installation.

C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of security windows.

D. Inspect built-in installations, before installing security windows, to verify that anchor installations comply with requirements. Prepare inspection reports.

1. Remove and replace anchors where inspections indicate that they do not comply with specified requirements. Reinspect after repairs or replacements are made.
2. Perform additional inspections to determine compliance of replaced or additional work. Prepare anchor inspection reports.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing security windows to in-place construction. Include threaded fasteners for inserts, security fasteners, and other connectors.

B. Removable Glazing Stops and Trim: Fasten components with security fasteners.

C. Fasteners: Install security windows using fasteners recommended by manufacturer with head style appropriate for installation requirements, strength, and finish of adjacent materials. Provide stainless-steel fasteners in stainless-steel materials.

D. Sealants: Comply with requirements in Section 079200 "Joint Sealants" for installing sealants, fillers, and gaskets.

1. Set continuous sill members and flashing in a full sealant bed to provide weathertight construction unless otherwise indicated.
2. Seal frame perimeter with sealant to provide weathertight construction unless otherwise indicated.

E. Metal Protection: Where dissimilar metals will contact each other, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended in writing by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

3.3 FIELD QUALITY CONTROL

A. Inspect installed products to verify compliance with requirements. Prepare inspection reports and indicate compliance with and deviations from the Contract Documents.

B. Perform additional inspections to determine compliance of replaced or additional work. Prepare inspection reports.

C. Prepare field quality-control certification that states installed products and their installation comply with requirements in the Contract Documents.

3.4 ADJUSTING

A. Adjust horizontal-sliding, transaction security windows to provide a tight fit at contact points for smooth operation and a secure enclosure.

B. Remove and replace defective work, including security windows that are warped, bowed, or otherwise unacceptable.

3.5 CLEANING AND PROTECTION

A. Clean surfaces promptly after installation of security windows. Take care to avoid damaging the finish. Remove excess glazing and sealant compounds, dirt, and other substances.

1. Lubricate sliding security window hardware.

B. Provide temporary protection to ensure that security windows are without damage at time of Substantial Completion.

END OF SECTION 085652

SECTION 087100 - DOOR HARDWARE

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. Definition: Door Hardware includes items known commercially as Door Hardware which are required for swing doors, except special types of unique and non-matching hardware specified in the same section as the door and door frame.

B. Provide all Door Hardware necessary to complete the project, whether particularly mentioned or not, and match in quality and finish the material specified.

C. Door Hardware listed herein shall in no way be construed as a complete Hardware Schedule and shall be considered as an indication of the intended Hardware requirements desired by the Owner. It shall be the Hardware Supplier's responsibility to examine the Drawings and Door Schedule and provide all necessary or additional Hardware as required but not scheduled herein in order to properly complete each installation. Such items of hardware shall be of the same type, quality and quantity as that scheduled for similar doors used for similar purposes in other parts of the building. A Schedule of Fabrication and Delivery shall be executed to avoid any delay of the entire project.

1.3 CODES AND REGULATIONS

A. Door Hardware listed or furnished shall meet requirements of current Federal, State or Local Codes including IBC International Building Code 2018, New Jersey Edition. Items furnished and installed not meeting these requirements will be removed and replaced at no additional cost to the Owner.

1.4 SUBMITTALS

A. Product Data: Submit manufacturers catalogued product literature with technical information for each item of hardware. Include whatever information may be necessary to show compliance with requirements and conformance with the Owner’s Standard, and include instructions for installation for maintenance of operating parts and finish.

B. All materials or products specified herein and/or indicated on Architect's Drawings by Trade name, Manufacturer's name or Catalog number shall be provided as specified to maintain Owner’s Standard for facility maintenance and security. Substitutions shall be considered in

accordance with specified requirements and for compatibility with facility Owner's maintenance program requirements.

C. Final Hardware Schedule Content: Based on builders hardware indicated, organize hardware schedule into "Hardware Sets" with an index of doors and heading indicating complete designation of every item required for each door or opening. Include the following information.

1. Type, style, function, size, quality and finish of each hardware item.
2. Name, part number and manufacturer of each item.
3. Fastening components, sizes and other pertinent information.
4. Location of hardware set cross-referenced to indications on Drawings both on floor plans and in door and frame schedule.
5. Explanation of all abbreviations, symbols, codes, etc., contained in schedule.
6. Mounting locations and mounting templates for all hardware.
7. Door and frame sizes and materials with reinforcement requirements indicated for proper installation of hardware.
8. Submit manufacturer's technical data and installation instructions for all electronic hardware.
9. Keying information.
10. Manufacturer's cuts on all hardware to be supplied.

D. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled. The Owner will provide the final keying and numbering system for the project during the submittal phase.

1.5 QUALITY ASSURANCE

A. Obtain each kind of hardware (latch and locksets, exit devices, hinges, and closers) from only one manufacturer, although several may be indicated as offering products complying with requirements.

B. Hardware supplier shall be a direct factory contract supplier who has in his employment a certified hardware consultant (AHC) who is available at all reasonable times during the course of the Work, and for project hardware consultation to the Owner, Architect, and Contractor.

C. Schedule Designations: Except as otherwise indicated, the use of one manufacturer's numeric designation system in schedules does not imply that another manufacturer's products will not be acceptable, Provided they comply with Owner Standards and unless they are not equal in design, size, weight, finish function, or other quality of significance.

D. Exit Doors: Openable at all times from the inside without the use of a key or any special knowledge or effort. Exceptions, enclosed courtyards shall be openable at all times from the exterior without the use of a key or any special knowledge or effort.

E. For all door hardware with wiring, provide adequate length of wiring to connect electrified hardware to junction and control boxes. Contractor to coordinate between subcontractors the wiring requirements and lengths in order to complete the Work.

F. Electronic Security Hardware:

1. Contractor shall schedule a meeting with their hardware consultant and their electrical subcontractor and all other subcontractors associated with the Work, and with the Owner, the Owner's Security Access Control Vendor, and the Architect, prior to the preparation of the shop drawings. Meeting shall be held to coordinate the Contractor's Work with the Owner's Work.
2. Coordinate installation of the electronic security with the Owner and Electrical Contractor for power and networking connections and provide installation and technical data to the Architect and other related sub-contractor(s).
3. Upon completion of the electronic security hardware installation, verify that all components are working properly and state in the required guarantee that this inspection has been performed. Refer to Section 087400 for additional information.

1.6 DELIVERY, STORAGE AND HANDLING

A. Packaging of hardware on a set-by-set basis is the responsibility of the supplier. As material is received by the hardware supplier from various manufacturers, inventory, sort and repackage in containers, complete with proper fastening and appurtenances, clearly marked on the outside to indicate content and specific locations in the project and hardware set number. Two or more identical sets may be packed in the same container.

B. Deliver packaged hardware items at the times and to the locations (shop or field) for installation, as directed by the Contractor.

C. Provide secure lock-up for hardware delivered to the project, but not yet installed. Control, handling and installation of hardware items, not immediately replaceable, so that the completion of the work will not be delayed by hardware losses both before and after installation.

1.7 PROJECT CONDITIONS

A. Coordination: Coordinate hardware with other work. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing security and similar requirements indicated, as necessary for the proper installation and function, regardless of omissions or conflicts in the information on the Contract Documents.

B. Check and verify approved Shop Drawings for doors and entrances to confirm that adequate provisions will be made for the proper installation of hardware.

C. Templates: Furnish hardware templates to each fabricator of doors, frames and other work to be factory-prepared for the installation of hardware. Upon request, check the shop drawings of such other work to confirm that adequate provisions are made for the proper installation of hardware.

D. Responsibilities of Door Hardware Supplier:

1. Submittals: Coordinate and process submittals for Builders Hardware in same manner as submittals for other work.
2. Coordination: Coordinate builder's hardware with other work. Furnish hardware supplier or manufacturer with shop drawings of other work where required or requested. Verify completeness and propriety of hardware with supplier.
3. Installation Information: The general types and approximate quantities of hardware required for this project are indicated at the end of this section in order to establish Contractors costs for installation.

1.8 MAINTENANCE:

A. Extra Service Materials: 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 Section.

1. Special Tools: Provide special wrenches and tools applicable to each different or special hardware component.
2. Maintenance Tools: Provide maintenance tools and accessories supplied by hardware component manufacturer.
3. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra service materials.

B. Maintenance Service: Submit for Owner's consideration maintenance service agreement for electronic products installed.

1.9 WARRANTY

A. Manufacturer's Warranty:

1. Hinges: Lifetime.
2. Exit Devices: Five Years.
3. Mortise Locksets: Lifetime.
4. Cylinders: Three years.
5. Closers: Lifetime.
6. Electrical Products: One Year.
7. All other Hardware, including electro-mechanical door hardware: Two years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. The following listed material is intended to serve as a guide for the requirements of this project. Hardware manufactured by other than those manufacturers specifically described or listed in this Specification will be considered, providing it complies with District Standards and is proven equal in every respect.

B. All door hardware shall be the product of one Manufacturer to the greatest extent possible. All numbers and symbols used in the preparation of this Specification have been taken from the catalogs of the following manufacturers

C. Catalog numbers listed are taken from the catalogs of the following manufacturers, or approved equal.

Item:	Manufacturer:
Hinges	Stanley
Continuous Hinges	Stanley
Locksets	Corbin Russwin
Cylinders	Corbin Russwin
Exit Power Transfer	Securitron
Closers	LCN
Push/Pull Bars	Trimco
Protection Plates	Trimco
Stops	Rockwood
Door Contacts	Securitron
Power Supply	Securitron
Coordinator & Brackets	Rockwood or Trimco
Threshold & Gasketing	National Guard

D. Furnish all items of hardware required to complete the work in accordance with specifications and plans.

E. Carefully inspect Project for the extent of the door hardware required to complete the Work. Where there is a conflict between these Specifications and existing hardware or existing conditions, notify the Architect in writing of the conflict with recommendations for resolving the problem for Architect's review and approval.

2.2 MATERIALS & FABRICATION

A. Hinges:

1. Owner Basis of Design: Stanley Commercial Hardware. FBB179 US26d 4.5x4.5.
2. Template screw hole locations
3. Minimum of 2 permanently lubricated non-detachable bearings
4. Equip with easily seated, non-rising pins
5. Provide hinges with non-removable pins (NRP) at out-swing locations
6. Sufficient size to allow 180-degree swing of door
7. Furnish hinges with five knuckles and exposed bearings
8. Provide hinges of proper height and width for door size.
9. Furnish 3 hinges per leaf to 7 foot 6 inch height. Add one for each additional 30 inches in height or fraction thereof.
10. Certified by BHMA for all applicable ANSI Standards for type, size, function and finish
11. UL10C listed for Fire

B. Geared Continuous Hinges:

1. Certified by BHMA for ANSI A156.26 Grade 1
2. Anti-spinning through fastener
3. UL10C listed for 3 hour Fire rating
4. Non-handed
5. Lifetime warranty
6. Provide Fire Pins for 3-hour fire ratings
7. Sufficient size to permit door to swing 180 degrees

C. Cylinder Locks and Latches:

1. Owner Basis of Design: Corbin Russwin, an ASSA Abloy Company, CL3300 Lever Series.
   a. Passage sets to be CL3310
   b. Locksets to be CL 3357
   c. Finish: 626

2. Furnish UL or recognized independent laboratory certified mechanical operational testing to 4 million cycles minimum.
3. Provide 9001-Quality Management and 14001-Environmental Management.
4. Functions and design as indicated in the hardware groups
5. Solid, one-piece, 3/4-inch (19mm) throw, anti-friction latchbolt made of self-lubricating stainless steel
6. Deadbolt functions shall have 1 inch (25mm) throw bolt made of hardened stainless steel
7. Latchbolt and Deadbolt are to extend into the case a minimum of 3/8 inch (9.5mm) when fully extended
8. Backset: 2-3/4" unless otherwise noted.
9. Auxiliary deadlatch to be made of one piece stainless steel, permanently lubricated
10. Provide sufficient curved strike lip to protect door trim
11. Lever handles must be of forged or cast brass, bronze or stainless steel construction and conform to ANSI A117.1. Levers that contain a hollow cavity are not acceptable
12. Lock shall have self-aligning, thru-bolted trim
13. Levers to operate a roller bearing spindle hub mechanism
14. Spindle to be designed to prevent forced entry from attacking of lever
15. Provide locksets with 6-pin removable and interchangeable core cylinders
16. Each lever to have independent spring mechanism controlling it
17. Core face must be the same finish as the lockset.

D. Door Closers shall:

1. Owner Basis of Design: LCN Closers 4040xp.
2. Tested and approved by BHMA for ANSI 156.4, Grade 1
3. UL10C certified
4. Provide 9001-Quality Management and 14001-Environmental Management.
5. Closer shall have extra-duty arms and knuckles
6. Conform to ANSI 117.1
7. Maximum 2 7/16 inch case projection with non-ferrous cover
8. Separate adjusting valves for closing and latching speed, and backcheck
9. Provide adapter plates, shim spacers and blade stop spacers as required by frame and door conditions

10. Full rack and pinion type closer with 1½“ minimum bore
11. Mount closers on non-public side of door and stair side of stairs, unless otherwise noted in specification
12. Closers shall be non-handed, non-sized and multi-sized.

E. Door Stops: Provide a wall stop for every opening as listed in the hardware sets.

1. Wall stop shall be wrought bronze, brass or stainless steel.
2. Provide fastener suitable for wall construction.
3. Coordinate reinforcement of walls where wall stop is specified.

F. Overhead Stops: Provide a Surface mounted or concealed overhead when a wall stop cannot be used or when listed in the hardware set.

1. Concealed overhead stops shall be heavy duty bronze or stainless steel.
2. Surface overhead stops shall be heavy duty bronze or stainless steel.

G. Kick Plates: Provide with four beveled edges ANSI J102, 10 inches high by width less 2 inches on single doors and 1 inch on pairs of doors. Furnish oval-head countersunk screws to match finish.

H. Door Bolts: Flush bolts for wood or metal doors.

1. Provide a set of Semi-Automatic bolts, Certified ANSI/BHMA 156.3 Type 25 for hollow metal label doors.
2. Provide a set of Semi-Automatic bolts, Certified ANSI/BHMA 156.3 Type 27 at wood label doors.
3. Provide Dust Proof Strike, Certified ANSI/BHMA 156.16 at doors with flush bolts without thresholds.

I. Power Transfer: Power transfer device shall be of door and frame edge mount design. Manufactured to be concealed when door is closed. Steel housing and quick connector end pieces. Furnish with capability to accept wires in quantity indicated or as needed for electric hardware. Back plates are made of 14 gage steel. Provide 4 screw mounting holes countersunk with flathead screws. Units “UL Listed” as Miscellaneous Fire Door Accessory. Coordinate position in door and frame with other hardware applications.

J. Power Supply: UL Listed, Field Selectable 12VDC or 24VDC output. The power supply will specifically designed to support electric locks and access controls. The power supply uses 115 VAC at 800mA input. The power shall be able to be expanded to four station controls. The filtered and regulated output power is field selectable for 12 or 24 VDC.

1. Fire Alarm/Life Safety emergency release included in power supply.
2. Available options for multiple door options four or more control stations, Adjustable Time delay relay, Battery charging, Battery Backup.
3. Acceptable Manufacturers:

    a. Corbin Russwin Hardware (RU) – 782.
    b. Sargent Manufacturing (SA) – 3500 Series.

c. Von Duprin (VO) - PS.
d. Yale Locks and Hardware (YA) 782.

K. Door Bottoms/Sweeps: Surface mounted or concealed door bottom where listed in the hardware sets.

1. Door seal shall be resilient seal of (Neoprene, Polyurethane, Nylon Brush, Silicone)
2. UL10C Positive Pressure rated seal set when required.

L. Thresholds: Thresholds shall be aluminum beveled type with maximum height of ½" for conformance with ADA requirements. Furnish as specified and per details. Provide fasteners and screws suitable for floor conditions.

M. Silencers: Furnish silencers on all interior frames, 3 for single doors, 2 for pairs. Omit where any type of seals occur.

2.3 FINISH

A. General: BHMA 630 Satin Stainless Steel for locksets and 626 Satin Chrome cylinders unless otherwise indicated.

B. Protection Plates, Push, Pulls, Exit Devices shall be BHMA 630 Satin Stainless Steel unless otherwise indicated.

C. Powder coat door closers to match other hardware, unless otherwise noted.

D. Aluminum items shall be finished to match predominant adjacent material. Seals to coordinate with frame color.

2.4 KEYING REQUIREMENTS

A. Locksets, cylinders and cores must be compatible with Owner Standard: Best, 6 Pin Small Format Core. Coordinate final keying and numbering with the Owner.

B. Provide cylinders and keys prepared for, reviewed and approved by the Owner and in accordance with the approved keying schedule.

C. Keys and cylinders shall be stamped with the applicable key mark for identification. These visual key control marks or codes will not include the actual key cuts. Permanent keys will also be stamped "Do Not Duplicate."

D. Furnish keys for the following and as directed by Owner:
1. (1) Masterkey (keyed the same as the HR Suite)
2. (1) Change Key

E. Keying schedule: Contractor to coordinate with Owner – continue with HR key and room numbering.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of conditions: Examine doors, frames, related items and conditions under which Work is to be performed and identify conditions detrimental to proper and or timely completion.

1. Do not proceed until unsatisfactory conditions have been corrected.

3.2 HARDWARE LOCATIONS

A. Hinges:

1. Bottom Hinge: 10 inches from door bottom to bottom of hinge.
2. Top Hinge: 5 inches from door top to top of hinge.
3. Center Hinge: Center between top and bottom hinge.
4. Extra Hinge: 6 inches from bottom of top hinge to top of extra hinge.

B. Lock: 38 inches from finished floor to center of lever or knob.

C. Exit Device: 39-13/16 inches from finished floor to center of pad unless indicted otherwise.

D. Deadlock Strike: 44 inches from floor, centered.

3.3 INSTALLATION

A. Install each hardware item per manufacturer's instructions and recommendations. Do not install surface mounted items until finishes have been completed on the substrate. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

B. Install Conforming to ICC/ANSI A117.1 Accessible and Usable Building and Facilities.

1. Adjust door closer sweep periods so that from the open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the landing side of the door.

C. Installed hardware using the manufacturers fasteners provided. Drill and tap all screw holes located in metallic materials. Do not use “Riv-Nuts” or similar products.

3.4 ADJUSTING

A. Adjust hardware for smooth operation.

B. Whenever the hardware is installed more than a period of one month prior to the acceptance or occupancy of the space or area, the contractor shall return to the project one week prior to

acceptance or occupancy and make a final check and adjustment of all hardware items in such space or area.

C. At the completion of the project, the manufacturer's suppliers or representatives shall inspect their hardware and make any corrections required as a result of errors or improper installation.

D. Submit certification that items specified have been properly installed and are functioning properly.

3.5 SCHEDULE OF DOOR HARDWARE

A. The Hardware Sets are intended to indicate the general quality and type of hardware required for each opening and are not intended as a complete description. If hardware for any particular opening is incomplete or not listed, but necessary for proper operation, it shall be furnished as required and as listed for a similar opening.

Manufacturer List

Code	Name
AB	ABH Manufacturing Inc.
CR	Corbin Russwin
BE	Best Access Systems
NA	National Guard
LCN	LCN
PR	Precision
RO	Rockwood
SE	Securitron
SD	Security Door Controls
SH	Stanley Commercial Hardware
ST	Stanley
TR	Trimco

Finish List

Code	Description
AL	Aluminum
626	Satin Chromium Plated
630	Satin Stainless Steel
689	Aluminum Painted
GREY	Grey
BLACK	Black
US32D	Stainless Steel, Dull

Refer to Contract Drawings for Hardware Sets and additional information.

END OF SECTION 087100

SECTION 087400 – ACCESS CONTROL HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes commercial door hardware for the following:

1. Swinging doors.

B. Door hardware includes, but is not necessarily limited to, the following:

1. Electromechanical door hardware.
2. Power transfer devices and wiring harnesses.
3. Electrified and access control door hardware power supplies, back-ups and surge protection.

C. Responsibilities:

1. Owner will provide all access control hardware
2. Contractor shall be responsible to install all access control hardware
3. 2 doors will receive existing access control hardware that is to be relocated from doors by the Contractor and installed on new doors.
4. 1 door will receive new access control hardware provide by the Owner.

D. Related Sections:

1. Division 08 Section “Hollow Metal Frames”.
2. Division 08 Section “Flush Wood Doors”.
3. Division 08 Section “Door Hardware”.
4. Electrical Drawings for connections to electrical power system and for low-voltage wiring work.

E. Codes and 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. NFPA 70 - National Electrical Code.
4. NFPA 80 - Fire Doors and Windows.

5. NFPA 101 - Life Safety Code.
6. NFPA 105 - Installation of Smoke Door Assemblies.
7. State Building Codes, Local Amendments.

F. Standards: All hardware specified herein shall comply with the following industry standards:

1. ANSI/BHMA Certified Product Standards – A156 Series.
2. UL10C – Positive Pressure Fire Tests of Door Assemblies.

G. Products installed, but not provided under this Section include the following. Coordination to remain a requirement of this Section.

1.3 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Content: Include the following information:

a. Type, style, function, size, label, hand, and finish of each door hardware item.
b. Manufacturer of each item.
c. Fastenings and other pertinent information.
d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
e. Explanation of abbreviations, symbols, and codes contained in schedule.
f. Mounting locations for door hardware.
g. Door and frame sizes and materials.
h. System Operational Descriptions: Complete system operational narratives for access controlled openings defining the owner's prescribed requirements for the opening functionality. Narratives include, but are not limited to, the following situations: normal secured/unsecured state of door; authorized access; authorized egress; unauthorized access; unauthorized egress; fire alarm and loss of power conditions, and interfaces with other building control systems.

C. Shop Drawings: Details of electrified access control hardware indicating the following:

1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:

a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
b. Complete (risers, point-to-point) access control system block wiring diagrams.

2. Electrical Coordination: Coordinate with related Electrical Requirements on the drawings for the voltages and wiring details required at electrically controlled and operated hardware openings.

1.4 QUALITY ASSURANCE

A. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedules.

1.5 COORDINATION

A. Integrated Access Control Door Hardware and Electrical Coordination: Coordinate the layout and installation of scheduled integrated access control door hardware, and related access control equipment, with required connections to source power junction boxes, power supplies, detection and monitoring hardware and fire alarm system.

B. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

C. Door and Frame Preparation: Related Division 08 Sections. doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.6 WARRANTY

A. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

B. Standard Warranty Period: Two-years from date of Substantial Completion, unless otherwise indicated.

1.7 MAINTENANCE SERVICE

A. Maintenance Service: Beginning at Substantial Completion, and running concurrent with the specified warranty period, provide continuous (6) months full maintenance including repair and replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door opening operation. Provide parts and supplies as used in the manufacture and installation of original products.

1.8 SCOPE OF WORK

A. Access Control Site Management System: Furnish and install at the indicated locations the specified integrated access control door hardware for a completely operational access control and security site management system. The Owner will be responsible for providing the card access readers and tieing into the existing Owner's head end equipment. System to be installed by Contractor includes, but is not necessarily limited, to the following:

1. Electrified integrated access control locks and exit hardware, special tools, operating manuals, and required cabling and accessories as detailed below and listed in the Access Control Hardware Sets in Section 087100

    a. Provide manufacturer approved integrated access control locks and exit hardware that are functionally compatible with the specified access control equipment interfaces.

2. Power Supplies, including battery, required for the integrated access control door hardware.
3. Installation, final configuration and commissioning of integrated access control door hardware, power supplies and related accessories.
4. Electrical contractor, refer to electrical drawings, to provide the following:

    a. Source power wiring (120VAC) as required for the integrated access control door hardware and power supplies. This includes quad outlets as required on a dedicated circuit in the designated IT/Telecom room(s) and the related conduit, stub-in, junction boxes and connectors required for the source power delivery and connections.
    b. Provide required conduit, stub-in, junction and back boxes for the integrated access control door hardware at each access controlled opening per plan drawings and specs. Supply and install conduit between the aforementioned devices and between the electrical junction boxes, power supplies and access control equipment located on or above the door opening.

        1) At electrified hardware power transfers provide conduit on the secured side of the opening from the power transfer, thru-wire hinge, or serviceable panel location on the frame jamb to the related power supplies and access control equipment.

    c. Contractor to provide all 120VAC cabling connections and terminations from the electrical junction boxes to these electrical devices.

d. Contractor to provide low voltage wiring (12/24VDC) and communication required for electrified and integrated access control door hardware, remote card readers, keypads, or display terminals, monitoring and signaling switches, and power supplies. Work includes related connectors, final terminations, and hook-ups required for a complete and functional access controlled opening in accordance with applicable codes and specified system operational narratives.

5. Final connections to fire alarm system, if required, by electrical and fire alarm system contractors.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Owner shall provide integrated access control door hardware and accessories for each designated opening to comply with requirements in this Section and with the Access Control Hardware Sets listed at the end of Part 3.

B. System Design: The electrified door hardware specified to include standardized components regularly manufactured and utilized within the source manufacturer's product lines.

C. The electrified access control door hardware contained in this Section represents a complete engineered system. Complete systems to include at a minimum the required power supplies, power transfers, and electrified and integrated locking hardware and accessories.

2.2 ELECTRIFIED LOCKS AND LATCHES

A. Owner Basis of Design: Securitron M32B or M32FB Series, or approved equivalent that is compliant with the owner's existing system.

B. Electrified Options: Unless otherwise indicated, provide electrified exit devices standard as fail secure.

2.3 ELECTRONIC ACCESSORIES

A. Owner shall supply all card access control hardware – Contractor to install.

B. Door Position Switches: Door position magnetic reed contact switches specifically designed for use in commercial door applications. On recessed models the contact and magnetic housing snap-lock into a 1" diameter hole. Surface mounted models include wide gap distance design complete with armored flex cabling. Provide SPDT, N/O switches with optional Rare Earth Magnet installation on steel doors with flush top channels.

1. Acceptable Manufacturers:

a. Securitron (SE) - DPS Series.
b. Sargent Manufacturing (SA) 3287.
c. Security Door Controls (SD) - DPS Series.
d. Or approved equal

C. Power Supplies: Provide Nationally Recognized Testing Laboratory Listed 12VDC or 24VDC (field selectable) filtered and regulated power supplies. Include battery backup option with integral battery charging capability in addition to operating the DC load in event of line voltage failure. Provide the least number of units, at the appropriate amperage level, sufficient to exceed the required total draw for the specified electrified hardware and access control equipment.

1. Acceptable Manufacturers:

a. Corbin Russwin Hardware (RU) – 781N.
b. Sargent Manufacturing (SA) – 3500 Series.
c. Securitron (SE) - BPS Series.
d. Von Duprin (VO) – PS.
e. Or approved equal

2.4 CABLES AND WIRING

A. Comply with Electrical Drawings for information regarding Conductors and Cables for Electronic Safety and Security.

B. Install appropriate number of conductor pairs, in the wire gage (AWG) recommended by manufacturer, corresponding to the electronic locking functions specified, amperage drawn and distances covered between the power supplies, power transfer devices, electrified hardware and access control equipment.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Examine roughing-in for electrical source power to verify actual locations of wiring connections before electrified and integrated access control door hardware installation.

C. Notify Owner of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Doors and frames at scheduled access controlled openings to be properly prepared to receive specified electrified and access control hardware and connections without additional in-field modifications.

3.3 INSTALLATION

A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

D. Boxed Power Supplies: Verify locations with Owner.

1. Configuration: Provide the least number of power supplies required to adequately serve doors with access control equipment.

E. Final connect the system control switches (integrated reader locking hardware, remote readers, keypads, etc.), and monitoring and signaling equipment to the related Controller devices at each opening to properly operate the electrified door and access control hardware according to system operational narratives.

3.4 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.5 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. and provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

END OF SECTION 087400

SECTION 088000 - 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. Non-rated glass for windows, doors, and interior borrowed lites
2. Glazing sealants and accessories.

B. Related Requirements:

1. Section 081213 "Hollow Metal Frames."
2. Section 081416 “Flush Wood Doors.”
3. Section 084126 “All Glass Entrances”

1.3 DEFINITIONS

A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.

C. IBC: International Building Code, 2018 New Jersey edition, current adopted version.

D. Interspace: Space between lites of an insulating-glass unit.

1.4 COORDINATION

A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of glass product and glazing material indicated.

1.6 INFORMATIONAL SUBMITTALS

A. Product Certificates: For glass and glazing products, from manufacturer.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

B. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

1. Guardian Industries Corporation.
2. JE Berkowitz, LP.
3. Oldcastle Building Envelope.
4. Pilkington North America.
5. PPG Industries, Inc.
6. Or otherwise listed with specific glass types in other Sections.

2.2 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; or other defects in construction.

B. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.

1. Each pane of safety glazing installed shall be identified by a manufacturer’s designation specifying who applied the designation, the manufacturer or installer and the safety glazing standard with which it complies. The designation shall be acid etched, sand blasted, ceramic fired, laser etched, embossed, or of a type that once applied, cannot be removed without being destroyed.

C. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:

1. For monolithic-glass lites, properties are based on units with lites of thickness indicated.

2.3 GLASS PRODUCTS, GENERAL

A. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction or the glazing manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

B. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than the thickness indicated.

1. Minimum Glass Thickness for Interior Lites: Not less than 1/4 inch.

C. Strength: Where annealed float glass is indicated, provide annealed float glass, heat-strengthened float glass, or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.4 GLASS PRODUCTS

A. Fully Tempered Float Glass (SAFETY GLAZING): ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) as indicated, Quality-Q3.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
2. Each pane of tempered glazing (except tempered spandrel glazing) installed shall be identified by a manufacturer’s designation specifying who applied the designation, the manufacturer or installer and the safety glazing standard with which it complies. The designation shall be acid etched, sand blasted, ceramic fired, laser etched, embossed, or of a type that once applied, cannot be removed without being destroyed

2.5 MONOLITHIC GLASS TYPE GL-1

A. Clear, fully tempered float glass.

1. Thickness: 6.0 mm.
2. Provide safety glazing labeling (see Glass Products, General above).

2.6 GLAZING SEALANTS

A. General:

1. Compatibility: Compatible with one another and with other materials they contact, including glass products, 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 manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
3. Field-applied sealants shall have a VOC content of not more than 250 g/L.
4. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.

B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 25, Use NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following, or approved equal:

   a. Dow Corning Corporation; 799.
   b. GE Advanced Materials - Silicones; UltraGlaze SSG4000
   c. Tremco Incorporated; Tremsil 600.

2. Applications: Interior perimeter joints between frame and opening.

2.7 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, with requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.8 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.

a. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:

1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
2. Minimum required face and edge clearances.
3. Effective sealing between joints of glass-framing members.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

B. Examine glazing units to locate interior surfaces. Label or mark units as needed so that interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Adjust glazing channel dimensions as required by Project conditions during installation to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.

D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

G. Provide spacers for glass lites where length plus width is larger than 50 inches.

1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

J. Set glass lites with proper orientation so that coatings face interior as specified.

K. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

L. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until right before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant.

G. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 CLEANING AND PROTECTION

A. Protect glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.

1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.

C. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

END OF SECTION 088000

SECTION 092116 - GYPSUM BOARD ASSEMBLIES

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. Provide all labor, materials, accessories, equipment, incidentals to complete gypsum board assembly work, as indicated and required including, but not necessarily limited to, the following:

1. Interior Gypsum Wallboard.
2. Non-Load-Bearing Steel Framing and Furring.
3. Metal Grid Ceiling and Soffit Suspension System.
4. Accessories and trim.
5. Taping and Spackling.
6. Reinforcing and blocking to receive and support the work of other trades.
7. Building in items furnished by other trades and/or contracts.

B. Related Work Specified Elsewhere:

1. Rough Carpentry: Division 6.
2. Building Insulation: Division 7.
3. Painting: Division 9.
4. Mechanical and Electrical Items and Fixtures: Refer to Drawings

1.3 SUBMITTALS

A. Submit manufacturer's product data and installation instructions for each type of product indicated.

B. Shop Drawings showing layout, locations, fabrication, and installation of all control and expansion joints including plans, elevations, sections, details of components and attachments of other units of work including concealed blocking.

C. Submit ceiling grid and soffit suspension system layout drawings, to scale, showing spacing, dimensions of members, direction of main runners, edge conditions where abutting other surfaces, seismic bracing details, custom trim and ceiling opening locations including; location of diffusers, grilles, lighting fixtures, smoke detectors, sprinklers, and other items.

1.4 QUALITY ASSURANCE

A. Comply with the requirements of the following:

1.	ASTM C 474	"Standard Test Methods for Joint Treatment Materials for Gypsum Board Construction."
2.	ASTM C 475	"Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board."
3.	ASTM C 645	"Standard Specification for Nonstructural Steel Framing Members."
4.	ASTM C 754	"Standard Specification for Installation of Steel Framing Members to Receive Screw Attached Gypsum Panel Products."
5.	ASTM C 840	"Standard Specification for Application and Finishing of Gypsum Board."
6.	ASTM C 919	"Standard Specification for Use of Sealants in Acoustical Applications."
7.	ASTM C 954	"Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 inches (0.84 mm) to 0.112 in. (2.84 mm) in thickness."
8.	ASTM C 1002	"Standard Specification for Specification for Steel Drill Screws for the Application of Gypsum Panel or Metal Plaster Bases."
9.	ASTM C 1047	"Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base."
10.	ASTM C 1396	"Standard Specification for Gypsum Wallboard."
11.	GA-216	"Recommend Specifications for the Application and Finishing of Gypsum Board."

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original unopened containers, packages or bundles bearing brand name and identification of manufacturer or supplier.

B. Use or develop a written plan for the management of the jobsite for the delivery, storage, installation and protection of the products until completion of the project.

C. Store materials inside under cover and in manner to keep them dry, protected from direct exposure to rain, snow, condensation, direct sunlight, surface contamination, corrosion, damage, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

D. Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal corner beads and trim from being bent or damaged.

1.6 PROJECT CONDITIONS

A. Comply with ASTM C 840 requirements gypsum board manufacturer's written recommendations, whichever are more stringent, for environmental conditions before, during and after application of gypsum board construction work.

B. Environmental Limitations: Room temperatures shall be maintained at not less than 50 degrees F, during application of gypsum board for a minimum period of 48 hours prior to, during and following application of gypsum board, joint treatment materials and bonding of adhesives.

C. Further maintain not more than 80 degrees F (27 deg C) for 7 days prior to application of gypsum base, continuously during application, and after application until plaster skim coat is dry.

D. Avoid exposure to excessive, repetitive or continuous moisture, before, during, and after installation. Eliminate sources of moisture immediately

E. Ventilation: Adequate ventilation shall be maintained in the work area of building spaces as required to remove water in excess of that required for drying of joint treatment material and plaster skim coat during installation and curing period. Avoid drafts during dry, hot weather to prevent too rapid drying.

F. Do not install interior gypsum panels until installation areas are enclosed and conditioned.

G. Do not install panels that are wet, 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.

H. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide products of one of the following or approved equal.

   1. Metal Support Materials:

      a. Dale/Incor, Inc.
      b. National Gypsum Co.
      c. Dietrich Industries, Inc.

   2. Grid Suspension Assemblies:

      a. Armstrong World Industries, Inc.
      b. Chicago Metallic Corp.
      c. USG Interiors, Inc.

   3. Gypsum Board and Related Products:

      a. Georgia-Pacific Corp.

b. Gold Bond Building Products Div., National Gypsum Co.
c. United States Gypsum Co.

4. Deflection Track and Clips:

a. The Steel Network, Inc.
b. or approved equal

2.2 STEEL PARTITION & SOFFIT FRAMING

A. Metal Studs: ASTM C645; 0.0329 (20 gauge) min. thickness of base metal unless otherwise indicated. Hot dipped galvanized per ASTM A 653, G 40, (G60 toilet rooms, and other interior locations subject to high humidity, steam and water).

1. Depth of Section: 3-5/8”, or as otherwise indicated.
2. Runners: Match studs; type recommended by stud manufacturer for floor and ceiling support of studs, and for vertical abutment of drywall work at other work.

B. Furring Members: ASTM C645; 0.0179 (25 gauge) hat-shaped. Face width, 1-1/4" with 7/8" depth. Designed for screw attachment.

C. Fasteners for Metal Framing: Provide in maximum lengths and widths available that will minimize joints in each area and correspond with support system indicated.

2.3 GRID CEILING & SOFFIT SUSPENSION SYSTEM

A. Grid Suspension System: Interior Ceilings and Soffits shall be constructed with direct hung drywall T-Bar suspension system used in lieu of carrying channel and metal furring. System shall meet minimum requirements of ASTM C 645; minimum G40 hot dipped galvanized. Steel thickness shall be .0179 before application of protective coating. Structural Classification to comply with ASTM C 635 for heavy duty system.

1. Main Beam: Heavy duty, double-web steel construction, conforming with ASTM C 635, hot dipped galvanized, 1-1/2” web height (1-11/16” at curved ceilings) with rectangular top bulb, and prefinished 15/16” flange or 1-1/2” flange (1-1/2” at curved ceilings). Fire-rated main beam shall be formed to include integral splice for expansion relief. Web is to be formed to receive override cross tee.
2. Primary Furring Cross Tees: Double-web steel construction, hot-dipped galvanized, 1-1/2” web height with rectangular bulb and hot dipped 1-1/2” knurled flange.
3. Secondary Framing Cross Tees: (for fixtures) Double web steel construction, hot dipped galvanized, 1-1/2” web height with rectangular bulb and 15/16” flange (48” for ‘Type G’ fixtures); (49” for ‘Type F’ fixtures).
4. Hat Channel Furring: 48” x 1 3/8” x 7/8” hot dipped galvanized steel compatible with main beams.
5. Wall Molding: Hot dipped galvanized steel, hemmed angle molding, 1-1/4” height with 1-1/4” flange or unhemmed channel molding 3/4” x 1-9/16” x 1-1/4”.

6. Ceiling Hanger Wire: Hot dipped galvanized steel, no. 12 gauge. Hanger pull out to exceed 500 lbs.
7. Screws meeting ASTM C 1002 for wallboard application shall be bugle head screws in accordance with thickness of used material.
8. Assorted Trims and Reinforcing Clips that may be required include, but are not limited to manufacturer's appropriate clips for the system specified as follows:

    a. Angle Molding and Reverse Angle Moldings, Curved perimeter Trim, Angled and Radius Drywall Clips, Transition Clips, Adapter Clips, Retention Clips, Beam End Retaining Clips, Direct Load Ceiling Clips, Stiffening, etc. as indicated and required.

2.4 INTERIOR GYPSUM WALLBOARD

A. Panel Size: Provide panels in maximum lengths and widths available that will minimize joints in each area and correspond with the support system indicated.

B. All Gypsum Wallboards: ASTM C-1396; tapered edges, Type X for fire resistance rated assemblies.

1. Smooth Regular Faced Gypsum Wallboard: 5/8" thick, unless otherwise indicated, with long ends tapered.
2. Interior Gypsum Ceiling Board: 1/2" thick, unless otherwise indicated, manufactured with a special gypsum core containing additives to offer greater support and sag resistance for water based spray texture paints and insulation than 5/8" standard regular-type panels. Use Type X where required for fire resistance rated assemblies.

2.5 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047. Provide manufacturer's standard trim accessories of types indicated for drywall work, formed of electro-galvanized steel 28 gage (minimum) unless otherwise indicated with either knurled and perforated or expanded flanges for nailing or screwing and beaded for concealment of flanges in joint compound.

1. Provide corner beads at outside corners, LC-Beads (J-Bead) at exposed panel edges, L-Beads, U-Beads, special L-kerf-type edge trim beads and one-piece expansion (control) joint beads.

2.6 JOINT TREATMENT MATERIALS

A. Joint Treatment Materials: Comply with ASTM C 475 and recommendations of manufacturer.

B. Joint tape:

1. Use perforated paper type for interior wallboard and exterior gypsum ceiling board. Use 10-by-10 glass mesh for glass mat gypsum sheathing board and veneer plaster base panels with plaster bonder.

C. Joint compound: Comply with ASTM C 475 and recommendations of the manufacturer.

1. For interior gypsum wallboard use setting-type taping compound followed by coats of setting-type sandable topping compound or as otherwise recommended by manufacturer.

D. Concealed Acoustical Sealant: Non-drying, non-hardening, non-skinning, non-staining, non-bleeding, gunnable synthetic rubber sealant recommended for sealing interior concealed applications per ASTM C 919.

2.7 AUXILIARY MATERIALS

A. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

B. Spot Grout: ASTM C 475, setting-type joint compound recommended for spot grouting steel door frames, transoms, side lites and borrowed lites.

C. Fastening Adhesive for Wood: ASTM C 557.

D. Fastening Adhesive for Metal: Special adhesive recommended for laminating gypsum panels to steel framing.

E. Steel Drill Screws: ASTM C 1002

F. Framing screws: ASTM C 646 - Corrosion Resistant

G. Power actuated fasteners: Type recommended by manufacturer for securing runners and furring strips to masonry and concrete.

H. Steel drill screws: ASTM C 954 - Corrosion Resistant for fastening panels to steel members.

I. Screws for cementitious backer units: Type and size as recommended by the backer unit manufacturer.

J. Isolation Strip at Exterior Walls: Foam gasket, adhesive-backed, closed-cell, vinyl foam strips that allow fastener penetration without foam displacement, 1/8” thick in width to suit steel stud size.

K. Acoustical Sealant: As specified in Division 07 Section "Joint Sealants."

PART 3 - EXECUTION

3.1 INSPECTION

A. Installer must examine the areas and conditions under which gypsum board assembly work is to be installed and notify the General Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.2 METAL SUPPORT

A. Comply with specified standards.

B. Metal Studs: Space maximum 16" o/c, unless otherwise indicated.

C. Furring Channels: Space maximum 16" o/c, unless otherwise indicated, and at not more than 4" from floor and ceiling lines or abutting walls, Secure in place 24" o/c on alternate flanges.

D. Install Framing, Bracing and Connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, fasteners, etc., whether shown or not, as required to provide a complete, rigid, stable and structurally sound installation.

E. Install supplementary framing and bracing at terminations in the work and for support of fixtures, equipment services, heavy trim, handrails, grab bars, accessories, furnishings, otherwise indicated, to comply with applicable published recommendations of gypsum board manufacturer and "Gypsum Construction Handbook" published by United States Gypsum Co.

F. Extend partition framing tight to overhead roof construction except as otherwise shown.

G. Install auxiliary framing at termination of drywall work, and at openings, as required for support of both the drywall construction and other work indicated for support thereon.

H. Do not bridge building expansion joints and control joints with support system, frame both sides of joints with furring and other supports as indicated.

I. Install grid suspension system materials in accordance with Ceiling and Interior Systems Construction Association’s (CISCA) “Ceiling System’s Handbook” and manufacturer's printed instructions. Also comply with governing regulations, referenced standards, industry standards applicable to the work and as shown on final approved shop drawings.

J. Install grid suspension systems to comply with ASTM C 636, with hangers supported from overhead construction. Locate hangers near each end and spaced on 4' centers along carrying channel or main runners. Level to a tolerance of 1/8" in 12'-0".

K. Grid Suspension System: Attach perimeter wall track or angle where grid suspension system meets vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.

1. Hangers: No. 12 hanger wires spaced 4’-0” o/c in both directions, closer spacing if loads increase due to additional loading. Provide extra wires to hang lights, diffusers, etc. independent of grid.

2. Main Beam: Install at 4’-0” o/c with internal splice having expansion detail on both ends. Rout holes spaced 8” o/c to receive cross tees (spaced 16” o/c).
3. Cross Tees: Install at 16” o/c.
4. Vertical Steps, Soffits, Slopes, Curves: Use Drywall Angle Clips, Direct Load Ceiling Clips, Radius Clips, Drywall Attachment Clips, Transition Clips, Beam Adapter Clips, Retention Clips, Beam End Retaining Clips, Stiffening Braces, etc. or approved equal and additional wires as needed.
5. Accessories: Use Perimeter Trim and Angle Trim, Perimeter Channel Molding, Clips, Reinforcing Plates as recommended by system manufacturer or approved equal and additional wires as required.

L. Drywall to Acoustical transition: To form a transition from a drywall ceiling to an acoustical ceiling, use Drywall Transition Clips which allows use of the grid as a transitional trim.

M. Provide additional framing and blocking to build in and support items furnished in other Sections and other Contracts.

3.3 INSTALLATION OF METAL SYSTEM SUPPORT

A. Attach metal floor and top tracks in accordance with ASTM C 745 to beams and to underside of roof deck with suitable fasteners spaced no more than 24" on centers. Apply three (3) continuous bead of acoustical sealant above ceiling runner channels.

B. Install metal studs of appropriate gage and depth at specified spacing to meet intended fire rating and structural requirements.

C. Insert metal studs into floor and ceiling tracks and twist into position. Space studs on 16 inch centers. Screw studs to bottom and top/ceiling runners with sheet metal screws, (2) at top/ceiling and bottom. Provide additional studs not more that 2 inches from abutting partitions, and other construction. At corners, position on stud so that it forms the outside corner. Construct rough bucks and erect in place by cutting flanges and rigidly fastening to face of double studs with screws. Provide stud on each side of control joint set 1/2 inches apart.

D. Provide two rows of stiffener channels at 1/3 points of studs. Erect hollow metal door frames in rough opening frames, weld clips to double rough opening framing. Conform to details shown on approved shop drawings. Pot grout frames with gypsum at jamb anchor clips.

E. Provide offsets and furring framing to form soffits, for pipe chases and other work. Fabricate special framing and hangers using 1-1/2" screw channels in addition to studs and runners specified. Space framing at not greater than 20" centers. Fasten members where required for rigidity using sheet metal screws or staples, as recommended by framing manufacturer.

F. Provide additional framing to build in and support items such as handrails, grab bars, electrical components, etc. furnished under other sections. All work shall be accurately located, plumb, level and true to line.

G. Install sound attenuation blankets between studs of operable partition soffits. Carry full height above finished ceiling. Butt all joints tight.

3.4 WALLBOARD INSTALLATION

A. Installation of gypsum board products shall be in accordance with ASTM C 840 “Standard Specification for Application and Finishing of Gypsum Board”.

B. Inspect all surfaces and framing to which gypsum wallboard is to be applied. Remedy all conditions that will jeopardize satisfactory finish walls prior to installation of drywall. Check alignment and plumb of all framing and furring. Insulation will be double layer of wallboard unless noted otherwise.

C. Install sound attenuation blankets as indicated, and in accordance with insulation manufacturer’s recommendations for installation and attachment, prior to gypsum base unless readily installed after base has been installed on one side.

D. Install appropriate gypsum panel perpendicular to the framing and up against the floor and metal deck. Use the correct type and length of fastener, including spacing to meet the intended fire resistance rating. Install panels on both sides of the metal framing unless otherwise indicated.

E. Install gypsum soffit and ceiling boards across framing to minimize the number of abutting end joints and avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

F. Install single layer wallboard assemblies horizontally with Type "S" Bugle head drywall screws spaced not more than 12" o.c. Stagger joints on both sides of two sided partitions. Tightly install sound or thermal batt insulation as indicated between studs. Run three continuous beads of caulking at top of beam prior to installing wallboard. Butt boards together for a light contact at edges and ends with not more than 1/16" open space between boards. Do not force into place.

G. Install Double Layer with base layer of wallboard vertically to both sides of studs with Type “S” Bugle head drywall screws spaced not more than 12” o/c. Screw lengths must not be less than 3/8” greater than the total thickness of wallboard. Stagger joints on both sides of partitions with all joints taped. Tightly install sound batt insulation between studs. Face layer to be installed horizontally. Double Layer construction shall be of screw type construction as described in the Gypsum Construction handbook published by U.S.G. Run three continuous beads of caulking at floor prior to installing wallboard. Carry wallboard with insulation tight to underside of roof deck as indicated. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16” open space between boards. Do not force into place.

H. Position boards so that like edges abut, tapered edges against tapered edges and mill-cut field-cut ends against mill-cut or field-cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions. Provide temporary bracing as required until fully adhered.

I. Install gypsum board with face side out. Do not install imperfect, damaged, or damp panels. Butt panels together for a light contact at edges and ends with not more than 1/16-inch open space between panels. Do not force into place.

J. Form control joints and expansion joints with space between edges of boards, prepared to receive trim accessories. Spacing of control and expansion joints shall be as shown and/or in accordance with the gypsum board manufacturer's written recommendations.

K. Install in maximum practical lengths to span wall and ceiling framing without end (butt) joints. If butt joints do occur, stagger joints and locate as far as possible from center of walls and ceilings.

L. Cut openings in gypsum board to fit items to be built in, including electrical outlets, accessories, etc. Openings shall fit snugly and shall be small enough to be covered by plates and escutcheons. Both face and back paper shall be cut for all cutouts that are not made by use of a saw. Support gypsum board securely around all cutouts and openings.

M. Allow the other trades to install the needed services (MEP) through the first layer of gypsum board.

N. Install all required through stop penetrations. Continue installing the remaining gypsum panels to complete the wall in accordance with the fire rated design.

O. Install fasteners not more than 1" and no closer than 3/8" to end or edges. Space fasteners opposite each other on adjacent ends or edges. Begin fastening from center of wallboard and proceed toward outer end of edges. Apply pressure on wallboard adjacent to fasteners being driven to ensure that wallboard will be secured tightly to framing members. Check for looseness at fastener. Drive fasteners with shank reasonably perpendicular to face of board. Drive screws with a power screwdriver of type recommended by the wallboard manufacturer. Surface of head shall be below surface of paper without cutting paper. Apply acoustic sealant at all penetrations for electric receptacles, switches, wire, piping, ductwork and other applicable sources of sound transmission.

P. Pack voids in steel door and lite frames and the like, etc. with sound attenuation.

3.5 ACCESSORY INSTALLATION

A. General: Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports. Otherwise, fasten flanges by nailing or stapling in accordance with manufacturer's instructions and recommendations.

B. Install metal corner beads at external corners of drywall work.

C. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed, and except where plastic trim is indicated. Provide type with face flange to receive joint compound except where semi-finishing type is indicated. Install L-type trim where work is tightly abutted to other work, and install special kerf-type where other work kerfed to receive long leg of L-type trim. Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).

D. Install J-type semi-finishing trim where gypsum board edges are not covered by applied moldings.

E. Omit fastening wallboard closer than one support away from area where casing trim will be installed. Insert metal flange between wallboard and bearing surface, and move in until properly aligned. Fasten wallboard through metal flange before bedding perforated tape.

F. Maintain metal edge in a true line.

3.6 JOINT TREATMENT

A. Apply bedding compound to edge and end joints and to fastener heads. Use types as recommended by gypsum manufacturer for use with gypsum product being installed. Shear off surplus leaving a tapered groove for embedding tape. Leave no material on high edge. Allow 12 hours for drying before taping.

B. Apply a uniformly thin layer of bedding compound over the joint approximately 4" wide. Center tape over joints and embed into compound.

C. Allow compound to dry thoroughly for approximately 24 hours. Cover tape with a coat of compound and spread out 3" on each side of tape. Feather out at edges.

D. After preceding coat is thoroughly dry, apply another coat with slight uniform crown over joints. This coat must be smooth and with edges feathered out 3" beyond preceding coat.

E. All fastener heads and dimples shall receive at least three (3) coats of compound. Apply as each coat is applied to joints, allowing at least 24 hours between each coat.

F. Cover flanges of beads and trim with at lease two (2) coats of compound. First layer shall be bedding compound. Apply along with respective coats of compound on joints. Feather out compound approximately 9" from metal bead.

G. Sand coats of compounds when thoroughly dry and sanding is needed. Avoid roughing surface of gypsum board product.

H. Leave wallboard uniformly smooth and ready for decoration.

3.7 PROTECTION OF WORK

A. Provide temporary protection to installed panels, such as tarps, as required. The intent is to protect the gypsum panels in those areas where, when installed, exhibit increased potential for impingement by water in its liquid state. Protect from cascading water.

B. Provide final protection and maintain conditions, in a manner suitable to installer, which ensures gypsum board assembly work being without damage or deterioration at time of substantial completion.

END OF SECTION 092116

SECTION 095113 - ACOUSTICAL PANEL 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 Panels.
2. Metal Suspension Systems.
3. Metal Edge Moldings and Trim.
4. Miscellaneous accessories including Beam End Retaining Clips, Hold-Down Clips, Stiffening Braces and Hanger Wire, etc.

B. Related Requirements:

1. Section 092116 "Gypsum Board Assemblies" for ceilings and soffits.
2. Division 23 – Mechanical related work.
3. Division 26 – Electrical related work.

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 and accessory.

B. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.

1. Acoustical Panel: Set of 6-inch square samples of each type, color, pattern, and texture.
2. Exposed Suspension-System Members, Moldings, and Trim: Set of 6-inch long Samples of each type, finish, 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. Suspended ceiling components including spacing, direction of main runners, edge conditions, trim(s) and room centering.
2. Structural members to which suspension systems will be attached.
3. Size and location of initial access modules for acoustical panels.
4. Items penetrating finished ceiling including the following:

    a. Lighting fixtures.
    b. Air outlets and inlets.
    c. Speakers.
    d. Projector screen.
    e. Sprinklers.
    f. Access panels.
    g. Smoke Detectors.
    h. Data.

5. Perimeter moldings.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical panels, 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 panels, permit them to reach room temperature and stabilized moisture content.

C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: Comply with ASTM E 1264 for Class A materials.
2. Smoke-Developed Index: 50 or less.

B. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.2 ACOUSTICAL PANELS, GENERAL

A. Source Limitations: Obtain each type of acoustical ceiling panel and supporting suspension system from single source from single manufacturer.

B. Glass-Fiber-Based Panels: Made with binder containing no urea formaldehyde.

C. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances unless otherwise indicated.

1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface according to ASTM E 795.

D. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.

1. Where appearance characteristics of acoustical panels 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.

E. Broad Spectrum Antimicrobial Fungicide and Bactericide Treatment: Provide acoustical panels treated with manufacturer's standard antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

2.3 ACOUSTICAL PANEL TYPES

A. Available Manufacturers: Subject to compliance with requirements, manufacturers of products that may be include in the work include, but are not limited to the following, or approved equal:

1. USG Corporation. (Basis of Design for performance, design and quality)

B. Acoustical panel designations below are interior applications for high humidity and unconditioned spaces. Provide antimicrobial paint to inhibit mold and mildew growth and provide 30 year performance guarantee against sag or warp.

C. **ACP-1** – Offices and General Spaces

Panel Style/Model:	#88185, Mars Acoustical SQ Panel (Climaplus Performance)
Size:	24”x48”x3/4”
Fire Rating:	Class A, not for use as a fire rated ceiling assembly
NRC:	0.75
CAC:	35
LR:	0.90
Color	White
Suspension System:	Donn Centricitee DXT/DXLT 9/16” Acoustical Suspension System
Color	White

2.4 METAL SUSPENSION SYSTEMS, GENERAL

A. Metal Suspension-System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635.

1. High-Humidity Finish: Comply with ASTM C 635 requirements for "Coating Classification for Severe Environment Performance" where high-humidity finishes are indicated.

B. Components: Main runner and cross tees shall be double-web hot dipped galvanized steel construction per ASTM A635 with 15/16” type exposed flange design, unless otherwise indicated. Members shall be fire/flame rated and seismic zone rated. Each exposed bottom flange shall be continuous with unbroken roll formed cap the length of the member. Cap shall be steel, finished as specified below.

1. Structural Classification: Intermediate duty.
2. Main Beam: Routed 6” center to center, continuously along the length of its web to locate intersecting cross tees. Web Height shall be 1-1/2”.
3. 4’ Cross Tees: Web height shall be 1-1/2”.
4. 2’ Cross Tees: Web height shall be 1-3/8”.
5. End condition of Cross Tees: Staked-on (stab) end detail with override flange.

C. Cross Tee shall be double web bulb section of steel conforming to ASTM A 366, web height 1-1/2” and have a 15/16” bottom flange. Exposed bottom flange shall be continuous with unbroken roll formed cap the length of the member.

D. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:

1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641, Class 1 zinc coating, soft temper.

2. Size: Select wire diameter so its stress at three times hanger design load (ASTM C 635M, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 12 gauge diameter wire.

E. Hanger Rods or Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.

F. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed with 0.04-inch thick, galvanized-steel sheet complying with ASTM A 653, G90 coating designation; with bolted connections and 5/16-inch diameter bolts.

G. Hanger Channels shall be 1 1/2”; 0.475 lb. per 1,000 ft.; cold rolled steel or 1.12 lb. per 1,000 ft. hot rolled steel for integrating with metal stud framing for supporting suspended ceiling system.

H. Bulb Tee Hanger shall be used for suspending bulb tees from 1 1/2” hanger channels - hanger will slide onto and hang from channel and bulb tee will slide and be clipped to bulb tee hanger. Hanger is also known as “New York City Clip”.

I. Stiffening Brace shall be provided to the entire grid system of vestibule areas leading to the exterior and within 10 feet of exterior doors in areas exposed to wind uplift of up to 90 lbs./sq. ft. Brace shall be attached between the upper and lower ties on each vertical hanger wire. Combine with hold-down clips.

J. Lighting fixtures to have lighting fixture support clips in addition to being supported from above independent of ceiling grid.

2.5 METAL SUSPENSION SYSTEM

A. Available Manufacturers: Subject to compliance with requirements, manufacturers of products that may be include in the work include, but are not limited to the following, or approved equal:

1. USG. (Basis of Design for performance, design and quality).

2.6 METAL EDGE MOLDINGS AND TRIM

A. Available Manufacturers: Subject to compliance with requirements, manufacturers of products that may be include in the work include, but are not limited to the following, or approved equal:

1. USG. (Basis of Design for performance, design and quality).

B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.

1. Provide manufacturer's standard edge moldings that fit acoustical panel edge details and suspension systems indicated and that match width and configuration of exposed runners unless otherwise indicated.

2. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.
3. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

C. Extruded-Aluminum Edge Moldings and Trim: Where indicated, provide manufacturer's extruded-aluminum edge moldings and trim of profile indicated or referenced by manufacturer's designations, including splice plates, corner pieces, and attachment and other clips, complying with seismic design requirements and the following:

1. Baked-Enamel or Powder-Coat Finish: Minimum dry film thickness of 1.5 mils. Comply with ASTM C 635 and coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.
2. Aluminum Alloy: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than the strength and durability properties of aluminum extrusions complying with ASTM B 221 for Alloy and Temper 6063-T5.
3. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

D. Wall moldings shall be “L” shape molding and have at least 7/8” exposed flanges, not less than .019 nominal steel with finish specified below. Use shadow molding with square edge lay-in and 15/16” flanges where indicated. Include inside and outside corner moldings with rounded inside corners for bullnose block walls.

E. Bullnose Corner Cover: For use with 15/16” grids. USG Donn Brand or approved equal. Cover snaps over molding to trim outside corners. Fits 1” radius block.

F. Special Profiled Perimeter Trim as indicated and shall be of extruded aluminum channel trim compatible with the exposed suspension system. Profile height as indicated and finished to match ceiling grid.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.

B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Unless otherwise indicated on the drawings, avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION

A. General: Install acoustical panel ceilings to comply with ASTM C 636, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook." Comply with governing regulations, referenced standards, industry standards applicable to the work and as shown on final approved shop drawings.

B. Suspend ceiling hangers from building's structural members and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, post installed mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
8. Do not attach hangers to steel deck tabs.
9. Do not attach hangers to steel roof deck. Attach hangers to structural members.
10. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.

C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without

attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or post installed anchors.

D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.

1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
3. Do not use exposed fasteners, including pop rivets, on moldings and trim.

E. Suspend main runners not more than 48" center-to-center, from overhead structure by not less than #12 gauge galvanized steel wire spaced 48", center-to-center, accurately leveled. Join cross tees to main runners through pre-routed openings in runners, locking webs together by means of die-formed end tabs to form a positive interlock. Main runners and cross tees shall rest on angel moldings at walls.

F. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

G. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.

1. Arrange directionally patterned acoustical panels as indicated on reflected ceiling plans.
2. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.
3. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
4. For reveal-edged panels on suspension-system members with box-shaped flanges, install panels with reveal surfaces in firm contact with suspension-system surfaces and panel faces flush with bottom face of runners.
5. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
6. Install hold-down and/or impact clips in areas indicated, in areas required by authorities having jurisdiction, and for fire-resistance ratings; space as recommended by panel manufacturer's written instructions unless otherwise indicated.
7. Install clean-room gasket system in areas indicated, sealing each panel and fixture as recommended by panel manufacturer's written instructions.
8. Protect lighting fixtures and air ducts to comply with requirements indicated for fire-resistance-rated assembly.

H. Apply acoustic sealant, concealed on backs of vertical legs of trim moldings; at ceiling perimeters; around penetrating fixtures and elsewhere as required.

3.4 COORDINATION

A. Cooperate with other trades for installation of their materials and equipment, particularly with those installing the ductwork ceiling diffusers, electrical fixtures and plumbing fixtures so that diffusers, lighting fixtures and other items are located on center lines of tile or on centers of joints, as shown on approved shop drawings.

B. Where light fixtures or other recessed items occur in ceilings, frame properly to permit installation of such recessed items, and do all necessary cutting and fitting of acoustical materials and suspension systems to accommodate work. Cut neatly around all pipes passing through ceilings.

3.5 CLEANING AND PROTECTION

A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

B. The Installer shall advise the Contractor of required protection for the acoustical ceilings, including temperature and humidity limitations and dust control, so that the work will be without damage and deterioration at the time of acceptance by the Owner.

END OF SECTION 095113

SECTION 096500 - 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 DESCRIPTION OF WORK

A. Provide all labor, materials, accessories, equipment and incidentals to complete Resilient Flooring work, as shown and/or specified, including but not necessarily limited to the following:

1. Luxury Vinyl Flooring.
2. Resilient Rubber Wall Base.
3. Resilient Flooring Accessories.
4. Inspection and preparation of subfloors.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer to perform work of this Section who has specialized in installing resilient floor coverings of the type(s) required for this Project and with a record of successful in-service performance and who is certified or approved by the flooring manufacturer.

B. Source Limitations: Obtain each type, color, and pattern of each type of resilient flooring product specified from one source for each resilient floor covering product with resources to provide products of consistent quality in appearance and physical properties without delaying the Work.

C. Fire Test Performance: Provide resilient flooring products and accessories that comply with the following fire performance characteristics as determined by testing products per ASTM test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

1. Critical Radiant Flux: Class II, Not less than 0.22 watts per sq. cm when tested in conformance with ASTM E 648.
2. Smoke Density: Less than 450 in conformance with ASTM E 662.
3. Static Coefficient of Friction: Greater than 0.6 for level surfaces and greater than 0.8 for ramped surfaces in accordance with ASTM D 2047.

1.4 SUBMITTALS

A. Product data: Submit manufacturer’s product data, installation instructions, and maintenance recommendations for each type of product specified.

B. Samples for selection purposes of each type of flooring, base and accessory consisting of actual tiles or 6-by-9 inch sections showing full range of colors and patterns available for each type of product indicated for approval and color selection.

C. Certification by manufacturer of each type of resilient flooring product that products provided for resilient flooring installation comply with local regulations controlling use of volatile organic compounds (VOC's).

D. Maintenance Data: Submit three copies of manufacturer's recommended maintenance practices for each type of resilient flooring product and accessory required.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver resilient flooring and accessory products and installation accessories to the Project site in manufacturer’s original unopened cartons and containers each bearing names of product and manufacturer, Project identification, and shipping and handling instructions.

B. Store and handle materials in strict compliance with manufacturer’s recommendations.

C. Store materials in dry spaces protected from the weather with ambient temperatures maintained between 50 deg F (10 deg C) and 90 deg F (32 deg C) or as otherwise recommended by the manufacturer. Store tiles on flat surfaces. Store rolls upright.

D. Move resilient products and installation accessories into spaces where they will be installed at least 72 hours in advance of installation.

E. Deliver Materials sufficiently in advance of installation to condition materials to room temperature prior to installation.

1.6 PROJECT CONDITIONS

A. Maintain temperature of not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C) in spaces to receive resilient flooring products for at least 72 hours prior to installation, during installation, and for not less than 72 hours after installation. Subsequently, maintain a temperature of not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C) in areas where work is completed.

B. Do not install resilient flooring materials and accessories until they are at the same temperature as the space where they are to be installed.

C. Maintain relative humidity in spaces to receive resilient flooring products and accessories before, during, and after installation within the range recommended in writing by manufacturer.

D. Close spaces to traffic during flooring installation and for time period after installation recommended in writing by manufacturer.

E. Install resilient flooring and accessories after other finishing operations, including painting and ceiling operations, have been completed. Moisture content of concrete slabs and environmental conditions must be within limits recommended by manufacturer of products being installed for sufficient bonding with adhesives as determined by moisture tests.

1.7 ADDITIONAL STOCK

A. Deliver additional stock to Owner. Furnish additional materials matching products installed, packaged with protective covering for storage and identified with labels clearly describing contents. Furnish not less than 10%, of each type, color, pattern class, wearing surface and size of each resilient tile flooring item installed. Furnish not less than 10% in roll form for each 500 linear feet (150 linear m) or fraction thereof, of each type, color, pattern, and size of resilient accessory installed.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Luxury Vinyl Tile Flooring: Shaw LVT, or approved equal, complete tile products for feature lay-ins 1/8” thick with a static coefficient of friction greater than 0.6 for level surfaces. Material shall be a solid vinyl tile with Diamond10 coating and minimum .5mm wear layer thickness.

B. Resilient Base: Roppe or approved equal, rubber base; 700 Series, rubber; with matching end stops and preformed or molded corners; 4” height or as otherwise indicated indicated; 1/8" gauge.

C. Resilient Edge Strips: Homogenous vinyl or rubber composition; 1/8" thick; not less than 1" wide; tapered or bullnose edge as selected by the Architect.

D. Metal Edge Strips: Extruded aluminum with mill finish of width shown, of height required to protect exposed edge of tiles, and in maximum available lengths to minimize running joints.

E. Concrete Slab Primer: Nonstaining type as approved and recommended by the flooring product manufacturer.

F. Trowelable Underlayment, Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic cement based formulation provided by or approved by the resilient product manufacturer for applications intended.

G. Adhesives (Cements): Water-resistant adhesive of type recommended by the flooring manufacturer to suite resilient flooring products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Prior to installation, inspect subfloors and surfaces to verify that conditions are satisfactory for flooring installation and comply with resilient flooring manufacturer's requirements and those specified in this section. Notify Architect in writing of any serious defects or conditions which will interfere or prevent a satisfactory installation and do not proceed with work until unsatisfactory conditions are corrected. Starting of installation shall imply acceptance of the surface. Comply with manufacturer's recommendations including the following:

1. Substrates shall be dry and clean.
2. Substrates shall be free of depressions, raised areas, or other defects that would telegraph through installed flooring.
3. Temperature of resilient flooring and substrate shall be tested and within specified tolerances.
4. Moisture condition and adhesive bond tests shall be performed as specified and recorded.

B. For applications on concrete, verify that concrete slabs and substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond, moisture, and pH tests recommended in wring by the flooring manufacturer. Do not proceed with installation until improper conditions have been removed or corrected have been removed as specified and in accordance with resilient product manufacturer's written requirements.

C. Perform adhesive bond test in each major area, minimum 1 per 1,000 square feet, prior to installation. Examine after 72 hours to determine whether bond is solid and no moisture is present. Do not proceed with work until results of bond test are acceptable.

3.2 PREPARATION

A. Comply with ASTM F 710 and manufacturer's written recommendations for surface preparation of substrates and installation methods. Remove substances incompatible with resilient flooring adhesive by method acceptable to manufacturer.

B. Contractor shall fully remove all existing remaining flooring adhesive that remains on the subfloor or encapsulate with a primer in order to ensure suitable adhesion.

C. Use trowelable leveling and patching compounds, in accordance with manufacturer's written instructions, to fill cracks, holes, and depressions in substrates.

D. Concrete subfloors shall be dry and free of curing compounds, sealers, hardeners, solvents, soaps, wax, oils, silicones and other materials whose presence would interfere with bonding adhesive and show through the surface, stain and/or destruct the flooring products. Perform moisture tests to determine whether concrete slabs are sufficiently cured.

E. Clean substrates thoroughly of all dust, dirt, grease, or other foreign matter before installing flooring and base. Fill cracks, holes and level irregularities with leveling and patching compounds. Apply primer if recommended by flooring manufacturer.

F. Concrete floors with steel troweled (slick) finish shall be properly roughened up (sanded) to ensure suitable adhesion.

G. Broom and vacuum clean substrates to be covered by flooring immediately before product installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.3 INSTALLATION

A. Floor Covering Installation General: Comply with manufacturer's written installation instructions.

B. Scribe, cut, and fit flooring to but neatly and tightly to vertical surfaces and permanent fixtures, including built-in furniture, cabinets, pipes, outlets, edgings, door frames, thresholds, and nosings.

C. Extend flooring into toe spaces, door reveals, closets, and similar openings.

D. Maintain reference markers, holes and openings that are in place or marked for future cutting by repeating of finish flooring as marled on the subfloor.

E. Install flooring on covers for telephone and electrical ducts and similar items in finished floor areas. Maintain overall continuity of color and pattern with flooring cut, scribed and installed on covers. Tightly adhere edges to perimeter of substrate around covers and to covers.

F. Adhere floor coverings to substrates using a full spread of adhesives applied to substrate to comply with adhesive and floor covering manufacturer's written instructions, including those for trowel notching, adhesive mixing, and adhesive open and working times.

G. Provide complete installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

H. Tile Installation:

1. Lay flooring from center marks established with principal walls or center aisles, discounting minor offsets, so that tile at opposite edges of areas are of equal width. Adjust as necessary to avoid use of cut width less than 1/2 tile at room perimeters. Lay flooring square to room axis, unless otherwise shown.
2. Match floor tiles for color and pattern by using tile from cartons of the same batch and mixing tiles as recommended in writing by the manufacturer. Cut tile neatly around all fixtures. Broken, cracked, chipped or deformed tiles are not acceptable.
3. Lay flooring with grain running in one direction unless directed otherwise.
4. Lay flooring in pattern layout design with respect to location of colors, patterns, borders, fields and design layout, and sizes as provided by time of submittal review by Architect.

5. Place flooring with adhesive cement in strict conformance with manufacturer's recommendations. Place epoxy caulking compound in the nose of all treads in accordance with tread manufacturer's recommendations. Scribe, cut and fit flooring materials as required. Butt tightly to vertical surfaces, thresholds, nosing and edgings. Extend flooring into toe spaces, door reveals and into closets and similar openings. Make joints even, straight and as inconspicuous as possible and laid tight. The entire surface shall be smooth, straight, and free from buckles, waves and projecting edges.
6. Tightly cement resilient flooring to subbase without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections. Hand roll resilient flooring at perimeter of each covered area to assure adhesion.
7. Maintain reference markers, holes or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other non-permanent marking device.
8. Use full spread of adhesive applied to substrate in accordance with tile manufacturer's directions including those for trowel notching, adhesive mixing, and adhesive open and working times.

3.4 ACCESSORIES

A. Apply wall base to walls columns, pilasters, casework and other permanent fixtures in rooms or areas where base is required. Install base in lengths as long as practicable, with preformed corner units. Tightly bond base to substrate throughout length of each piece, with continuous contact at horizontal and vertical surfaces.

1. On masonry surfaces, or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material and at bullnose masonry corners where preformed base is used, fill void with heat-weld seaming material.

B. Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at edges of flooring which would otherwise be exposed.

3.5 CLEANING AND PROTECTION

A. Touch-up and repair minor damage to eliminate all evidence of repair. Remove and replace work which cannot be satisfactorily repaired.

B. Perform all cleaning and protective operations immediately after installing flooring products as per manufacturer's written instructions, and leave floor and base in perfect condition.

C. Remove adhesive and other surface blemishes from face of flooring materials, accessories, and base using cleaner recommended in writing by the flooring product manufacturer as work progresses. Remove all spots and stains.

D. Clean surfaces only after adhesive has fully cured, no sooner than 72 hours after installation and in accordance with flooring product manufacturer's written recommendations. Clean surfaces

using non-abrasive materials and methods recommended by manufacturer. Remove and replace work that cannot be successfully cleaned.

E. After cleaning, apply a protective coating and/or sealer as recommended and in accordance with the flooring manufacturer's recommendations and procedures.

F. Protect flooring against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated and recommended in writing by flooring manufacturer.

G. Keep all traffic off finished resilient floors except where absolutely necessary. If traffic cannot be avoided, protect resilient flooring with approved reinforced building paper with taped joints. At completion and acceptance of building, all work shall be clean and whole and in perfect condition.

END OF SECTION 096500.

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SECTION 096813 - TILE 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. Provide all labor, materials, accessories, equipment and incidentals to complete tile carpeting work, as shown and specified, including but not necessarily limited to the following:

1. Modular, tufted carpet tile.

B. Related Sections include the following:

1. Division 09 for resilient flooring, wall base and accessories installed with carpet tile.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include manufacturer's written data and specifications on physical characteristics, durability, and fade resistance. Include written installation instructions and recommendations for each type of substrate.

B. Samples: For each type of the following products and for each pattern, color, texture, and construction required. Label each Sample with manufacturer's name, material description, color, pattern, construction and designation indicated on Drawings and in schedules.

1. Carpet Tile.
2. Exposed Edge, Transition, and other Accessory Stripping: 12-inch- (300-mm-) long Samples.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency.

D. Product Schedule: For carpet tile. Use same designations indicated on Drawings.

E. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:

1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

F. Warranty: Special warranty specified in this Section.

1.4 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Provide products with the critical radiant flux classification indicated in Part 2, as determined by testing identical products per ASTM E 648 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

1.5 PROJECT CONDITIONS

A. Environmental Limitations: Do not install carpet tiles until wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.

C. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

1.6 WARRANTY

A. Special Warranty for Carpet Tiles: Manufacturer's standard form in which manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within a period of not less than 15 years from the date of substantial completion of the Project:

1. Wear - Surface fiber wear shall not be more than 10% by weight in 15 years. (Note: Wear warranty shall not require use of chair pads).
2. Static - Static generation at less than 3.5 kV at 70º F, and 20% R.H.
3. No delamination.
4. No edge ravel.
5. No dimensional instability (i.e., shrinkage, curling and doming) which adversely affect the ability of the tile to lay flat.
6. Mergeability: Carpet that is of the same style/color, but from different dye lots and/or manufacturing dates, may be merged and used interchangeably, both at initial installation and at later selective replacement, to create a continuous carpeted surface with no tile appearing out of place.

B. Submit manufacturer’s certified test results by (NVLAP) National Voluntary Laboratory Accreditation Program, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to show that carpet meets or exceeds product performance specification criteria for carpet testing requirements under Section 2.1 hereof.

C. Installation provider shall warrant for (1) year following the date of substantial completion that all installation services have been performed in a workmanlike manner, and shall promptly re-perform all services not meeting this warranty.

1.7 EXTRA MATERIALS

A. Furnish extra materials described below, before installation begins, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Carpet Tile: Full-size units equal to 2 percent of amount installed for each type indicated, but not less than 20 sq. yd. (8.3 sq. m).

PART 2 - PRODUCTS

2.1 MODULAR CARPET TILE PERFORMANCE STANDARDS

A. Modular carpet tile shall meet the following performance standards:

1. Carpet Flammability

   a. NFPA 253 “Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source”: Class II, 0.22 watts/cm2 or better.
   b. DOC FF-1 “Pill Test” (CPSC 16 CFR, Part 1630): Passes

2. Smoke Density (ASTM E648): Less than or equal to 450 Flaming Mode
3. Dry Breaking Strength: Not less than 100 lbf (445 N) per ASTM D 2646.
4. Tuft Bind: Not less than 10 lbf (45 N**)** for loop pile per ASTM D 1335.
5. Delamination: Not less than 3.5 lbf/in. (15 N/mm) per ASTM D 3936.
6. Dimensional Tolerance: Within 1/32 inch (0.8 mm) of specified size dimensions, as determined by physical measurement.
7. Dimensional Stability: 0.1 percent or less change per (Aachen Test Method Din 54318).
8. Colorfastness to Crocking: Not less than 4, wet and dry, per AATCC 165.
9. Colorfastness to Light: Not less than 4 after 60 AFU (AATCC fading units) per AATCC 16, Option E.
10. Gas Fade (AATCC 23): 4.
11. Ozone Fade (AATCC 109) 4.
12. Antimicrobial Activity: AATCC 174, Part II) Not less than 95.0% reduction.
13. Fungicidal (AATCC 174, Part III) No growth.
14. Soil Protection (AATCC 175) Not less than 8.0 on the Red 40 Stain Scale.
15. Electrostatic Propensity: Static Generation at 70 deg. F, 20% R.H., less than 3.5 kV per AATCC 134 w/ neolite.
16. Sustainable Carpet Assessment Standard – NSF 140: Gold level as certified by a3rd party such as SCS (Shaw Kasuri is certified Platinum)
17. Product does not contain PVC, phthalates, or PBD/PBDE.

2.2 CARPET TILE

A. Available Products: Subject to compliance with existing carpet tile product installed within the existing Work area:

1. Interface or approved equal.

a. Style and Color: As indicated on Drawings.
b. Pattern: As indicated on Drawings.

B. Construction: Tufted, Textured Loop

C. Fiber Content: Wear On Type 6, 6 nylon.

D. Dye Method: 100% Solution Dyed as indicated by specified manufacturers.

E. Pile Characteristic: Tufted pattern loop.

F. Gauge: Minimum 1/10.

G. Stitches per Inch: 7.

H. Pile Height: Minimum 0.18.

I. Total Thickness: 0.132.

J. Average Density: 6273.

K. Primary Backing/Backcoating: Manufacturer's standard, Underscore ES Cushion.

L. Secondary Backing: Fiberglass Reinforced Thermoplastic Composite containing not less than 39% post consumer and/or post industrial material content. Secondary material shall be 100% recyclable at the end of its useful life.

M. Size: 50cm x 50cm.

N. Applied Soil-Resistance Treatment: Manufacturer's standard material.

O. Antimicrobial: (AATCC 171 Washed) (AATCC 174 Parts 2&3). Must pass both Part 2 and Part 3 of AATCC 174 with a minimum of 90% reduction both gram negative and gram positive bacteria and no macroscopic growth against the fungi.

P. Non-Directional or Random Installation Method: All product shall be designed for random installation, meaning that each and every tile can be installed in any of the four possible directions without regard to pile direction, pattern or orientation of any adjacent tiles while still creating a finished carpet tile assembly that appears to be a visually continuous carpeted surface with no tile appearing out of place or improperly positioned.

Q. Mergeability: Carpet that is of the same style/color, but from different dyelots and/or manufacturing dates, may be merged and used interchangeably, both at initial installation and at

later selective replacement, to create a continuous carpeted surface with no tile appearing out of place.

2.3 MINIMUM CONSTRUCTION STANDARDS IN ADDITION TO PRODUCT SPECIFICATIONS

A. Nylon Specification - All nylon fiber shall be branded (premium) type 6,6 or type 6 nylon from Invista, Solutia, Universal or Aquafil with performance certification from the fiber manufacturer. Faber shall have a cross-section modification ratio no greater than 2.5.

B. Any and all products must pass Carpet and Rug Institute “Green Label +” certification.

C. Finished modular product is required to be 3rd party certified as climate neutral.

D. Antimicrobial, registered by the EPA for use in carpeting, with broad spectrum efficacy against the growth of bacteria and fungi for a minimum of 15 years, assuming proper maintenance. The antimicrobial ingredient shall meet standards set by the U.S. General Services Administration (GSA) for Antimicrobial Carpet as supported by independent lab testing less than six months old.

1. Manufacturer shall provide a stamped EPA technical data sheet for carpet. Antimicrobial must contain no arsenic, formaldehyde or heavy metals (tin, lead, mercury, silver, copper or zinc), be non-halogenated (no fluorine, chlorine, bromine or iodine) and non-phenolic. Blends of amine neutralized phosphated esters are preferable. Antimicrobial must have low water solubility (30ppm), a vapor pressure of 12mm Hg at 27º C, and an oral LD50 toxicity rate less than 2.4 grams/kg.
2. The preservative should be incorporated into the primary latex coating of the product during the manufacturing process, not topically applied to the carpet fibers.
3. The antimicrobial treated carpet when new must pass GSA parameters for treated carpets via AATCC method 174 parts II and III. Initial performance must be 90% reduction of the microorganisms (Staphylococcus aureus 6538 and Klebsiella pneumoniae 4352) and no fungal growth on either the primary backing or fibers both on washed (AATCC method 174) and non-washed samples.
4. The antimicrobial treated carpet must maintain, for the warranted life of the carpet, a minimum of 90% reduction of the microorganisms (Staphylococcus aureus 6538 and Klebsiella pneumoniae 4352) listed in AATCC method 171 part II, provided the carpet is maintained as specified. Additionally, the antimicrobial treated carpet must maintain a "no macroscopic growth" rating against Aspergillus niger 6275 at the primary backing in accordance with AATCC 171 part III.
5. The preservative must be environmentally responsible i.e. (biodegradable and not toxic to non-target species).
6. Efficacy of the preservative should be documented in professional peer reviewed scientific publications.

2.4 RELATED CARPET MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer. Must be compatible with carpet adhesive and curing/sealing compound on concrete.

B. Adhesives: Water-resistant, mildew-resistant, non-staining, releasable, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile. Adhesive shall be water-based and allow for removal of carpet tile at any time without damage to carpet or substrate. Adhesive shall contain antimicrobial preservative and have “zero” calculated VOC’s and acceptable to and recommended by carpet tile manufacturer for releasable installation.

C. Carpet edge guard, non-metallic - Extruded or molded heavy duty vinyl or rubber carpet edge guard of size and profile indicated, and with minimum two inch wide anchorage flange; colors selected by architect/designer from among standard colors available within the industry.

D. Miscellaneous materials - As recommended by manufacturer of carpet. Other carpeting products to be selected by installation provider to meet project requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance. Examine carpet tile for type, color, pattern, and potential defects.

B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:

1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond tests recommended by carpet tile manufacturer.
2. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Comply with CRI 104, Section 6.2, "Site Conditions; Floor Preparation," and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.

B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks,

holes and depressions 1/8 inch (3 mm) wide or wider and protrusions more than 1/32 inch (0.8 mm), unless more stringent requirements are required by manufacturer's written instructions.

C. Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by carpet tile manufacturer.

D. Clean metal substrates of grease, oil, soil and rust, and prime if directed by adhesive manufacturer. Rough sand painted metal surfaces and remove loose paint. Sand aluminum surfaces, to remove metal oxides, immediately before, and if, applying adhesive.

E. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

A. Comply with manufacturer’s instructions and recommendations.

B. Install carpet under open-bottom obstructions and under removable flanges and furnishings, and into alcoves and closets of each space.

C. Provide cut outs where required. Conceal cut edges with protective edge guards or overlapping flanges. Bind or seal cut edges as recommended by carpet tile manufacturer.

D. Run carpet under open bottom items such as heating convectors and install tight against walls, columns and cabinets so that the entire floor area is covered with carpet. Cover over all floor type door closures.

E. Install edging guard at all openings and doors wherever carpet terminates, unless indicated otherwise.

F. Cutting shall be done in accordance with the manufacturer’s written recommendation, using the tools designed for the carpet being installed.

G. Use leveling compound where necessary. Any floor filling or leveling shall have a minimum of 4’-0” of feather.

H. Expansion joints - Do not bridge building expansion joints with continuous carpeting.

I. Comply with CRI 104, Section 14, "Carpet Modules," and with carpet tile manufacturer's written installation instructions and recommendations.

J. Installation Method: As recommended in writing by carpet tile manufacturer.

K. Maintain dye lot integrity. Do not mix dye lots in same area.

L. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, non-staining marking device.

M. Install pattern parallel to walls and borders unless patterns are random or non-directional.

3.4 CLEANING AND PROTECTION

A. Perform the following operations immediately after installing carpet tile:

1. Remove excess adhesive, seam sealer, dirt, carpet scraps and other surface blemishes using cleaner recommended by carpet tile manufacturer.
2. Remove yarns that protrude from carpet tile surface.
3. Vacuum carpet tile using commercial machine with face-beater element.

B. Remove debris, and sort pieces to be saved from scraps to be redirected and recycled.

C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

D. At the completion of the work, vacuum carpet using commercial dual motor vacuum of type recommended by carpet manufacturer. Remove spots and replace carpet where spots cannot be removed. Remove rejected carpeting and replace with new carpeting. Remove any protruding yarns with shears or sharp scissors.

3.5 INSPECTION

A. Upon completion of the installation, verify that work is complete, properly installed and acceptable.

END OF SECTION 096813

SECTION 099000 – PAINTING AND COATING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 DESCRIPTION OF WORK

A. Provide all plant, labor, materials, accessories, equipment and incidentals required to complete Painting and Coating work, including but not necessarily limited to, the following:

1. Surface preparation, priming and finish painting and coating of surfaces, except as otherwise specified.
2. Finish painting and coating primed surfaces, except as otherwise indicated.
3. Do not paint prefinished items, conceal surfaces, finished metal surfaces, operating parts and labels.
4. Where touch-up painting and coating work is required, re-finish the entire surface plane.
5. All other surfaces, not specifically noted, that require painting or coatings.

B. Paint or coat exposed surfaces, except where the finish schedule indicates that a surface or material is not to be painted, coated or is to remain natural. If the schedules do not specifically mention an item or a surface, paint or coat the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate color or finish, the Architect will select from standard colors and finishes available.

1. Painting and coating work includes field finishing of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.

C. Following categories of work are not included as part of field applied finish work or are included in other sections of these specifications.

1. Shop Priming: Shop priming of ferrous metals items is included under various sections covering structural steel, miscellaneous metal, hollow metal work and similar items.
2. Factory finished materials and equipment, including aluminum doors and frames, aluminum windows, skylights, curtain walls, toilet accessories, architectural woodwork to extent shop finished, prefinished wood doors, storage shelving, visual display board trim, metal edges, cyclone fence, acoustic plaster, and similar items.
3. Painting, coating and identification systems for mechanical and electrical work is specified in Plumbing, HVAC and Electrical Contracts Divisions, except as otherwise indicated.

4. Unless otherwise indicated, painting and coatings are not required on surfaces such as walls or ceilings in concealed areas and generally inaccessible areas, furred areas, pipe spaces, duct shafts, lift shafts.
5. Do not paint moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sinkages, sensing devices, motor and fan shafts, unless otherwise indicated.

1.3 REFERENCES

A. SSPC (The Society for Protective Coating) – Steel Structures Painting Manual.

B. EPA (Environmental Protection Agency) Method 24.

C. UL (Underwriters' Laboratories).

D. ASTM E 84 – Test method for Surface Burning Characteristics of Building Materials.

E. OTC (Ozone Transport Commission).

F. Applicable state requirement for VOC (Volatile Organic Compounds).

1.4 DEFINITIONS

A. Sheen: Specular gloss readings in accordance with ASTM D523.

1. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, a matte flat finish.
2. Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, a high-side sheen flat, velvet-like finish.
3. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, an eggshell finish.
4. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, a satin-like finish.
5. Gloss Level 5: 35 to 70 units at 60 degrees, a semi-gloss finish.
6. Gloss Level 6: 70 to 85 units at 60 degrees, a gloss finish.

1.5 SUBMITTALS

A. Product Data: Submit manufacturer's descriptive product data for each paint and coating product finish system specified. Include block fillers and primers. Product data shall include the product name and number, product descriptive performance data, (generic classification or binder type), manufacturer's stock number and date of manufacture, contents by volume for pigment and vehicle constituents, thinning, mixing, application and curing instructions, color name and number, and VOC content and . Submit certification on manufacturer's letterhead certifying all paint and coating products being provided are in compliance with VOC requirements as required by all applicable local and state regulatory agencies with initial

submittal and again at time of application. Submit manufacturer’s printed application instructions and methods, including mixing, surface preparation, compatible primers and topcoats, recommended wet and dry film thickness.

B. Prior to delivery of materials to the site, the Painting subcontractor shall submit for approval, the names and products of the manufacturer to be used. This list shall be on the manufacturer's letterhead and as detailed as the list specified below in Painting and Coating Schedule. The list shall include the specific brands of paints, coatings and finishes that will be provided for each differing surface, plus a statement that the products are suitable for the purposes intended and that they comply with the Specifications. This list shall identify where each product will be used within the project, and on what surface. Submission of manufacturer's materials list and certification of compliance shall receive Architect's approval and/or comment prior to ordering materials.

1.6 QUALITY ASSURANCE

A. Source limitations: Obtain block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.

B. Material application shall be applied under adequate illumination, evenly spread and smoothly applied, free of runs, sags, holidays, lap marks, air bubbles, and pin holes to assure a smooth finish.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the job site in original unbroken sealed containers with manufacturer’s labels intact and in strict accordance with manufacturer's written recommendations. Each container shall be inspected and approved prior to being opened for use. Maintain containers in clean condition, free of foreign materials and residue.

B. Packaging shall bear the manufacturer’s label with the following information:

1. Product name and type (description).
2. Batch date.
3. Color number.
4. VOC content.
5. Environmental handling requirements.
6. Surface preparation requirements.

C. Application instructions.

D. Take every precaution against fire. Store materials in tightly covered containers, in a well ventilated locked area with ambient temperatures continuously maintained at not less than 45 deg. F (7 deg. C) and in accordance with manufacturer’s written requirements. Keep rags, waste, debris, and materials which may constitute fire hazard in water-filled closed, tightly covered, properly labeled, metal containers for daily removal. If tarpaulins are used, they shall be kept neat and no smoking shall be permitted within the space. Provide and maintain proper

Class C hand fire extinguishers in the immediate area and all personnel shall be instructed in their use and informed of their location.

E. Take every precaution against the hazards of fume inhalation. Keep all areas well ventilated at all times. Where natural ventilation is insufficient to provide suitable conditions, provide special fans. If necessary, provide suitable face masks for mechanics.

1.8 PROJECT CONDITIONS

A. Apply paints and coatings only when temperature of surfaces to be painted or coated and surrounding air temperatures is above 50 and below 90 deg F. (10 and 35 deg. C), unless otherwise permitted by and in accordance with manufacturer's printed instructions.

B. Provide adequate continuous ventilation and sufficient heating facilities to maintain temperatures above 50 deg. F (3 deg. C) for 24 hours before, during and 48 hours after application of finishes.

C. Painting and coating work may be continued during inclement weather if areas and surfaces to be finished are enclosed and heated within temperature and ambient limits specified by the manufacturer during application and drying periods.

PART 2 - PRODUCTS

2.1 MANUFACTURER'S QUALITY

A. Materials shall be the highest quality grade (first line architectural), products of their respective kinds. Primers, stains and finish(es) of each coating system shall be of the same manufacturer.

B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, the following, or approved equal.

1. Benjamin Moore (Basis of Design). Refer to finish schedule for color selections.

C. Source Limitations: Coatings for each system shall be the product of the same manufacturer to ensure compatibility of systems. Substitutions of equivalent products of other manufacturers may be submitted for approval providing the products submitted are of the same types, have label analyses similar to those specified, meet or exceed the performance criteria, and are suitable for the use intended as approved by the Architect.

D. Use thinning materials only as specified by manufacturer’s labeled directions for each type of paint and coating. All coatings shall conform to all Federal, State and Local Regulations including VOC rules and air quality standards in effect at the Project location at the time of application.

2.2 MATERIALS GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint, coating, finishing system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint, coating and finishing system, provide products recommended in writing by manufacturers of topcoat for use in paint, coating and finishing system and on substrate indicated.

B. Colors: As indicated, or if not indicated, as selected by the Architect from manufacturers full range.

2.3 PAINTING AND COATING SCHEDULE

A. The following is a general guide for the finish painting required, but does not include every surface or material to be finished or painted. Paint schedule is based on each Manufacturer's first line quality products. Substitution products shall be accompanied by manufacturer's literature establishing evidence of the same; and interior products shall also be in compliance with VOC limits and shall not contain restricted Chemical Components described above.

B. Each of various undercoats of paint other than natural finishes to be a slightly different shade from the preceding coat stepping up to color selected in order to verify number of coats applied.

2.4 INTERIOR PAINT AND COATING SCHEDULE

A. Interior Ferrous Metal: Provide the following finish systems over ferrous metal: For use at higher abuse areas such as metal doors and frame, trim, etc.

1. Semi-Gloss, Latex Finish: Two finish coats over a primer.

a. Primer: Quick-drying, rust-inhibitive, metal primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer.

1) Moore: IronClad Latex Low Lustre Metal & Wood Enamel, (#363) VOC 380 g/L.

b. Finish Coats: Semi-Gloss, latex, applied at spreading rate recommended by the manufacturer.

1) Moore: Scuff-X Ultra, Semi-Gloss, (#487), VOC 29 g/L.

B. Interior Drywall: General Use Unless specifically noted otherwise, Eggshell Finish/Latex:

1. Eggshell, Latex Finish: Two finish coats over a primer.

a. Prime Coat: 1 coat New wall surfaces:

1) Moore: EcoSpec Interior Latex, Primer Sealer (231), VOC 0 g/L.

b. First and Second Coats: Matte, applied at spreading rate recommended by the manufacturer:

1) Moore: Scuff-X Ultra, Matte, (#484), VOC 8-9 g/L.

PART 3 - EXECUTION

3.1 INSPECTION

A. Applicator shall examine areas and conditions under which painting work is applied and take moisture readings with a reliable electronic moisture meter in sufficient area in each space and as often as necessary to determine the proper moisture content for application and notify Contractor in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the Applicator and in accordance with paint manufacturer’s written requirements for surface preparation. Starting of painting work will be construed as Applicator’s acceptance of such faces and conditions within any particular area.

B. Proceed with coating application only after unsatisfactory conditions have been corrected; application of coating indicates acceptance of surfaces and conditions

3.2 SURFACE PREPARATION

A. General: Perform preparation and cleaning procedures in accordance with paint manufacturer's written instructions and recommendations and as herein specified, for each particular substrate condition.

B. Remove 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.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Contractor shall prepare all surfaces, walls, ceilings, metal frames, etc., which are to be painted, including but not limited to, scraping, sanding, spackling, patching etc. as necessary to remove loose particles, paint, mildew, greasy residue, splatters, burrs, graffiti, surface decals, surface applied texture materials, mastic, glue, etc. Repoint and/or spackle holes, voids, defects, etc. to form a smooth level surface. Remove nails, screws, anchors and the like. Sand existing metal frames, etc. to smooth out edges of various paint layers.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie

coat as required to produce paint systems indicated.

D. Clean surfaces to be painted before applying paint or surface treatments. Remove dirt, oil and grease using an oil and grease emulsifier such as Moore's M83, or approved equal in accordance with SSPC-SPI Method B2 prior to mechanical cleaning. Program cleaning and painting so that contaminants from cleaning process will not fall onto wet, newly painted surfaces.

E. 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 (SSPC – SP-1).

F. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:

1. SSPC-SP 2, "Hand Tool Cleaning."
2. SSPC-SP 3, "Power Tool Cleaning."
3. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
4. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."

G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

H. Plastic Trim Fabrication Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

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 application. Do not stir surface film into material. Remove film and if necessary, strain material before using.

3.4 APPLICATION

A. General: Apply paint in accordance with manufacturer's written instructions and recommendations. Use applicators and techniques best suited for substrate and type of material being applied. Apply according to recommended dry film thickness and recommended square foot per gallon.

B. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

C. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers. Do not proceed without written confirmation from the topcoat manufacturer sent to Architect. Bare areas are to be spot primed.

D. Apply materials under adequate illumination, evenly spread and smoothly applied, free of runs, sags, holidays, lap marks, air bubbles, and pin holes to assure a smooth finish.

E. Apply additional coats when undercoat, stains or other conditions show through final paint coat, until paint film is of uniform finish, color and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces. Deep color base primers are to be used under deep finish colors to achieve proper color appearance.

F. Paint surfaces behind moveable equipment and furniture same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only before final installation of equipment.

G. Paint back sides of access panels, and removable or hinged covers to match exposed surfaces.

H. Sand lightly all abrasions and damaged spots, between each succeeding enamel, varnish coat, textured paint coat, and degloss previous painted surfaces if necessary. Spot prime water soluble stains. Reprime prior to applying finish coats as required.

I. 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 application of another coat of paint does not cause lifting or loss of adhesion of the under coat.

J. Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate, to establish a total dry film thickness as indicated or, if not indicated, as recommended by coating manufacturer.

K. Prime Coats: Apply prime coat of material which is required to be painted or finished, and which has not been prime coated by others. Prime coats shall be of the same manufacturer as the top coat.

L. 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.

M. Pigmented (Opaque) Finished: 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. Cut in sharp lines and color breaks.

N. Provide satin finish or semi-gloss for final coats as indicated in the painting schedule, unless otherwise indicated.

O. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:

1. Paint the following work where exposed in occupied spaces:

a. Equipment, including panelboards.
b. Uninsulated metal piping.
c. Uninsulated plastic piping.
d. Pipe hangers and supports.
e. Metal conduit.
f. Plastic conduit.
g. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
h. Other items as directed by Architect.

2. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

P. Guarantee: Manufacturer shall warrant material to conform to specification and be free of manufacturing defects for a period of one year. Applicator will guarantee that its installation of materials conforms to manufacturer's recommendations shall further guarantee its workmanship connected with the installation for a period of one year from the date of installation.

Q. 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 progress of work, remove from site discarded paint materials, rubbish, cans and rags at end of each work day.

B. Upon completion of painting work, clean window glass, plumbing fixtures, etc., 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.

C. 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 Architect.

D. At completion of work of other trades, Painting Subcontractor shall touch-up and restore all damaged or defaced painted surfaces.

END OF SECTION 099000

SECTION 101100 - VISUAL DISPLAY UNITS

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. Visual display board assemblies – marker boards.
2. Provide and install new units where indicated.
3. Remove and reinstall existing units where indicated.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, finishes, and accessories for visual display units.

B. Shop Drawings: For visual display units.

1. Include plans, elevations, sections, details, and attachment to other work.
2. Show locations of panel joints. Show locations of field-assembled joints for factory-fabricated units too large to ship in one piece.
3. Include sections of typical trim members.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For visual display units to include in maintenance manuals.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver factory-fabricated visual display units completely assembled in one piece. If dimensions exceed maximum manufactured unit size, or if unit size is impracticable to ship in one piece, provide two or more pieces with joints in locations indicated on approved Shop Drawings.

1.6 WARRANTY

A. Special Warranty for Porcelain-Enamel Face Sheets: Manufacturer agrees to repair or replace porcelain-enamel face sheets that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Surfaces lose original writing and erasing qualities.
b. Surfaces exhibit crazing, cracking, or flaking.

2. Warranty Period: Life of the building.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers of products that may be include in the work include, but are not limited to the following, or approved equal:

1. Claridge Products and Equipment, Inc. (Basis-of-Design)
2. AARCO Products, Inc.
3. Or approved equal.

B. Source Limitations: Obtain each type of visual display unit from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: 25 or less.
2. Smoke-Developed Index: 50 or less.

2.3 VISUAL DISPLAY BOARD ASSEMBLY

A. Visual Display Board Assemblies: Factory fabricated.

1. Assembly: Markerboard (White Board) and Interactive Dry Erase Board.
2. Corners: Square.
3. Width: As indicated on Drawings.
4. Height: As indicated on Drawings.
5. Mounting Method: Direct to wall.

B. Markerboard (White Board) Panel: Claridge LCS-II Markerboards, Porcelain-enameled-steel faced markerboard panel on core indicated.

1. Color: White.

C. Aluminum Frames and Trim: Fabricated from not less than 0.062-inch thick, extruded aluminum; standard size and shape.

1. Aluminum Finish: Clear anodic finish.

D. Joints: Make joints only where total length exceeds maximum manufactured length. Fabricate with minimum number of joints, balanced around center of board, as acceptable to Architect or as indicated and approved on Shop Drawings.

E. Combination Assemblies: Provide manufacturer's standard exposed trim between abutting sections of visual display panels.

2.4 MARKERBOARD PANELS

A. Porcelain-Enamel Markerboard Panels: Balanced, high-pressure, factory-laminated markerboard assembly of three-ply construction, consisting of moisture-barrier backing, core material, and porcelain-enamel face sheet with low-gloss finish. Laminate panels under heat and pressure with manufacturer's standard, flexible waterproof adhesive.

1. LCS-II low gloss surface.
2. Face Sheet Thickness: 0.019 inch minimum uncoated base metal thickness.
3. Particleboard or Medium Density Fiberboard Core: 7/16 inch thick; with 0.005-inch thick, aluminum sheet backing.
4. Laminating Adhesive: Manufacturer's standard moisture-resistant thermoplastic type.

2.5 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.6 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, surface conditions of wall, and other conditions affecting performance of the Work.

B. Examine walls and partitions for proper preparation and backing for visual display units.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of substances, such as dirt, mold, and mildew, that could impair the performance of and affect the smooth, finished surfaces of visual display boards.

B. Prepare surfaces to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, defects, projections, depressions, and substances that will impair bond between visual display units and wall surfaces.

3.3 INSTALLATION

A. General: Install visual display surfaces in locations and at mounting heights indicated on Drawings, or if not indicated, at heights indicated below. Keep perimeter lines straight, level, and plumb. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation.

B. Visual Display Board Assemblies: Attach concealed clips, hangers, and grounds to wall surfaces and to visual display board assemblies with fasteners at not more than 16 inches o.c. secure tops and bottoms of boards to walls. Apply egg-size adhesive gobs at 16 inches o.c., horizontally and vertically.

C. Visual Display Board Assembly Mounting Heights: Install visual display units at mounting heights indicated on Drawings, or if not indicated, at heights indicated below.

3.4 CLEANING AND PROTECTION

A. Clean visual display units according to manufacturer's written instructions. Attach one removable cleaning instructions label to visual display unit in each room.

B. Cover and protect visual display units after installation and cleaning.

END OF SECTION 101100

SECTION 102123 - PRIVACY CURTAINS AND TRACK

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. Curtain tracks and carriers.
2. Privacy curtains.

B. Related Requirements:

1. Section 061000 "Rough Carpentry" for supplementary wood framing and blocking for mounting items requiring anchorage.
2. Division 09 for Ceiling Systems.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include durability, laundry temperature limits, fade resistance, applied curtain treatment, and fire-test-response characteristics for each type of curtain fabric indicated.
2. Include data for each type of track.

B. Shop Drawings:

1. Show layout and types of cubicles, sizes of curtains, number of carriers, anchorage details, and conditions requiring accessories. Indicate dimensions taken from field measurements.
2. Include details on blocking above ceiling and in walls.

C. Samples for Verification: For each type of product required, prepared on Samples of size indicated below:

1. Curtain Fabric: 10-inch square swatch or larger as required to show complete pattern repeat, from dye lot used for the Work, with specified treatments applied. Mark top and face of material.
2. Mesh Top: Not less than 10 inches square.
3. Curtain Track: Not less than 10 inches long.

4. Curtain Carrier: Full-size unit.

D. Curtain and Track Schedule: Use same designations indicated on Drawings.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For curtains, track, and hardware to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers of products that may be include in the work include, but are not limited to the following, or approved equal:

1. Imperial Fastener Company, Inc.
2. Construction Specialties, Inc. (Basis of Design)
3. Clickeze by InPro Corporation.

2.2 PERFORMANCE REQUIREMENTS

A. Curtains: Provide curtain fabrics with the following characteristics:

1. Launderable to a temperature of not less than 90 deg F.
2. Flame resistant and identical to those that have passed NFPA 701 when tested by a testing and inspecting agency acceptable to authorities having jurisdiction.

a. Identify fabrics with appropriate markings of a qualified testing agency.

2.3 CURTAIN SUPPORT SYSTEMS

A. Model 6062 Curtain Track and 1062N Carrier as manufactured by Construction Specialties, Inc. or Approved Equal.

B. Extruded-Aluminum Curtain Track: Not less than 1-3/8 inches wide by 3/4 inch high with 0.058-inch minimum wall thickness.

1. Curved Track: Factory-fabricated, 12-inch radius bends.
2. Finish: Satin anodized.

C. Curtain Track Accessories: Fabricate splices, end caps, connectors, end stops, coupling and joining sleeves, wall flanges, brackets, ceiling clips, and other accessories from same material and with same finish as track.

1. Suspended-Track Support: Not less than 7/8-inch OD tube.
2. End Stop: Removable with carrier hook.
3. Switch Unit: Shuttle and coupling device for rerouting and securing cubicle curtain, with pull chain for switching track.

D. Curtain Carriers: Two-wheel nylon rollers and nylon axle with aluminum hook.

E. Exposed Fasteners: Stainless steel.

F. Concealed Fasteners: Hot-dip galvanized or Stainless steel.

2.4 CURTAINS

A. Curtain Fabrics

1. Curtain fabric shall be as indicated on the drawings.

B. Curtain Grommets: Two-piece, rolled-edge, rustproof, aluminum; spaced not more than 6 inches o.c.; machined into top hem.

C. Mesh Top: Not less than 20-inch high mesh top of No. 50 nylon mesh.

2.5 CURTAIN FABRICATION

A. Fabricate curtains as follows:

1. Width: Equal to track length from which curtain is hung plus 10 percent added fullness, but not less than 12 inches added fullness.
2. Length: Equal to floor-to-ceiling height, minus depth of track, carrier at top, and mesh top and minus clearance above the finished floor as follows:

    a. Privacy Curtains: 6 inches.

3. Top Hem: Not less than 1 inch and not more than 1-1/2 inches wide, triple thickness, reinforced with integral web, and double lockstitched.
4. Mesh Top: Top hem of mesh not less than 1 inch and not more than 1-1/2 inches wide, triple thickness, reinforced with integral web, and double lockstitched. Double lockstitch bottom of mesh directly to 1/2-inch triple thickness, top hem of curtain fabric.
5. Bottom Hem: Not less than 1 inch and not more than 1-1/2 inches wide, double thickness and double lockstitched.
6. Side Hems: Not less than 1/2 inch and not more than 1-1/4 inches wide, with double turned edges, and single lockstitched.

B. Vertical Seams: Not less than 1/2 inch wide, double turned and double stitched.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install tracks level and plumb, according to manufacturer's written instructions.

B. Up to 20 feet in length, provide track fabricated from single, continuous length.

1. Curtain Track Mounting: Surface.

C. Surface-Track Mounting: Fasten tracks to ceilings at intervals recommended by manufacturer. Fasten tracks to structure at each splice and tangent point of each corner. Center fasteners in track to ensure unencumbered carrier operation. Attach track to ceiling as follows:

1. Mechanically fasten directly to finished ceiling grid with fastener as recommended by manufacturer.

D. Track Accessories: Install splices, end caps, connectors, end stops, coupling and joining sleeves, and other accessories as required for a secure and operational installation.

E. Curtain Carriers: Provide curtain carriers adequate for 6-inch spacing along full length of curtain plus an additional carrier.

F. Curtains: Hang curtains on each curtain track.

END OF SECTION 102123

SECTION 104416 - FIRE EXTINGUISHERS

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. Portable, hand-carried fire extinguishers.
2. Mounting brackets for fire extinguishers.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher and mounting brackets.

B. Product Schedule: For fire extinguishers. Coordinate final fire-extinguisher schedule with fire-protection cabinet schedule to ensure proper fit and function. Use same designations where indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

A. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.

1.6 COORDINATION

A. Coordinate type and capacity of fire extinguishers with fire-protection cabinets to ensure fit and function.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Failure of hydrostatic test according to NFPA 10.
b. Faulty operation of valves or release levers.

2. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. NFPA Compliance: Fabricate, install and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers" and ICC/ANSI A117.1.

B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

1. Provide fire extinguishers approved, listed, and labeled by FM Global.

2.2 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

A. Fire Extinguishers: Type, size, and capacity for each fire-protection cabinet and mounting bracket indicated.

1. Available Manufacturers:

a. JL Industries.
b. Larson’s Manufacturing Company
c. Potter Roemer

2. Valves: Manufacturer's standard.
3. Handles and Levers: Manufacturer's standard.
4. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B, and bar coding for documenting fire-extinguisher location, inspections, maintenance, and recharging.

B. Multipurpose Dry-Chemical Type in Steel Container: UL-rated, 4-A:60-B:C, 10-lb nominal capacity, with mono-ammonium phosphate-based dry chemical in enameled-steel container. For general use environments for Type A, B and C fires.

2.3 MOUNTING BRACKETS (FE)

A. Mounting Brackets: Manufacturer's standard steel bracket, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or black baked-enamel finish.

B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.

1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface.

a. Orientation: Horizontal or Vertical.
b. Equal to JL Industries Model #LDHRFE, 7-1/8”x2-1/4” decal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fire extinguishers for proper charging and tagging.

1. Remove and replace damaged, defective, or undercharged fire extinguishers.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install fire extinguishers and mounting brackets in locations indicated and in compliance with requirements of authorities having jurisdiction.

1. Mounting Brackets: 44 inches above finished floor to handle assembly, or as indicated on drawings.

B. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

END OF SECTION 104416

SECTION 115213 - PROJECTION SCREENS

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. Provide all labor, materials, accessories, equipment and incidentals to complete projection screen work, as shown and/or specified, including but not limited to the following:

1. Electric projection screen

B. Electrical wiring, connections, and installation of remote control switch for electrically operated projection screens are included in Division 26.

1.3 QUALITY ASSURANCE

A. Single Source Responsibility: Provide each type of projection screen as a complete unit produced by a single manufacturer, including necessary mounting brackets, accessories, fittings and fastenings.

B. Coordination of Work: Coordinate layout and installation of projection screens with other construction supported by, or penetrating through, ceilings, including light fixtures, HVAC equipment, and penetrations, etc.

1.4 SUBMITTALS

A. Product Data: Submit copies of manufacturer's specifications and installation instructions for projection screen units.

B. Wiring diagram for electrically operated units.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver projection screens until building is enclosed, other construction within spaces where screens will be installed is substantially complete, and installation of screens is ready to take place.

B. Protect screens from damage during delivery, handling, storage and installation.

PART 2 - PRODUCTS

2.1 ELECTRIC PROJECTION SCREENS

A. Provide manufacturer's standard UL-listed and UL-marked units consisting of case, with independently motorized ceiling enclosure, screen, motor, controls, mounting accessories, and other components required for a complete installation and to comply with requirements indicated for screen surface, controls, case, motor, and screen under description of operation and type. Control operation of screen to be coordinated with AV system design, to be located at instructor station, unless otherwise indicated.

B. Projection screen fabric shall be of sufficient length to extend from the roller to within 24" of the finished floor with at least one and one-half (1-1/2) wraps (or approximately 14") of the screen fabric shall remain on the roller when fully extended. Any necessary seams in the viewing surface shall be invisible in the projected picture, and shall also be parallel to the roller. A pocket shall be provided at the bottom of the screen fabric, which shall contain a 3/8" continuous, solid steel rod. Projection screen fabric viewing surface shall be fire resistant and mildew-resistant, fiberglass matte white surface with black masking borders with. The face of the screen fabric shall be next to the roller and shall roll inside.

C. The motor shall be a 3 wire, 60 cycle, 110-120 Volt AC, instantly reversible motor, specifically designed for this purpose, with lifetime lubrication. The motor shall be equipped with an automatic internal thermal overload protector and shall be mounted on rubber vibration insulators to minimize noise transmission. The motor shall be fitted with a mechanical brake to eliminate coasting. The unit shall have "pre-set", but easily accessible limit switches to automatically stop the screen in the proper "up" and "down" positions. The entire drive module must be easily removable from the case.

D. The entire unit shall be listed by the Underwriters Laboratories, Inc., and shall bear the UL label.

E. The screen and case shall be supplied with a key-operated power supply control switch and a three (3) position, maintained contact toggle switch, which shall be capable of stopping or reversing the screen at any point in its operating cycle.

F. The switches shall be furnished complete with switch boxes, cover plates, and schematic wiring diagrams.

G. Provide a single motor low voltage control system, to allow control of the screen from the A/V system & the up/down switch on the instructor lab tables.

H. Products: Provide the following Projection Screen:

1. Da-Lite Advantage (Advantage Electrol), 92"W x 52"H Viewing Area (106" diagonal), 16:9 HDTV format screen. Matte White Finish
2. Standard 120 Volt
3. No Access Door
4. Extra Drop: 12" at top. Black.

5. Three-button wall switch
6. Owner will control using a SPST or DPDT relay.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install projection screens with screen cases in position and relationship to adjoining construction as indicated, securely anchored to supporting structure in accordance with IBC International Building Code 2018, for Architectural, Mechanical and Electrical Component Seismic Design Requirements for seismic bracing design requirements, in a manner that produces a smoothly operating screen with straight vertical edges, plumb and flat viewing surfaces, and at proper height when screen is lowered. Include accessories at locations shown in accordance with manufacturer's instructions. Cooperate with other trades for securing projection screen units to finished surfaces. Repair or replace damaged units as directed by Architect.

B. Test manually operated units to verify that screen operating components are in optimum functioning condition.

C. Test electrically operated units to verify that screen, controls, limit switches, closure and other operating components are in optimum functioning condition.

3.2 PROTECTION AND CLEANING

A. Protect projection screens after installation from damage during construction. If damage occurs despite such protection, remove and replace damaged components or entire unit as required to provide units in their original, undamaged condition.

END OF SECTION 115213

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 DESCRIPTION OF WORK

A. Provide all labor, material, accessories, equipment and incidentals required to complete roller window shade work as indicated including, but not limited to, the following:

1. Fabric Roller Window Shades, manual operation.
2. Provide window shades at all exterior windows in project area.

1.3 REFERENCES

A. ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

B. NFPA 701-99 - Fire Tests for Flame-Resistant Textiles and Films.

1.4 SUBMITTALS

A. Product data: Submit Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
2. Styles, material descriptions, dimensions of individual components, profiles, features, finishes and operating instructions.
3. Storage and handling requirements and recommendations.
4. Mounting details and installation methods.

B. Shop drawings showing window openings, locations and extent of roller shade work. Show dimensions, installation details, attachment methods, and relationship to adjoining work. Include elevations indicating roller shade units and controls for operating roller shade units from a height not exceeding 60 inches above finish floor.

C. Samples for selection by Architect from manufacturer’s full range:

1. Sample swatches showing the full range of colors textures, and patterns available for shade fabric and system assembly indicated.

2. Aluminum Finishes: Manufacturer's standard-size unit, not less than 3 inches (75 mm) square.

D. Submit certified test reports evidencing compliance with Fire Retardant Classification indicated under Quality Assurance article that fabric shades have been U.L. tested, listed in accordance with NFPA 701.

E. Maintenance data for complete roller shade system operation to be included in operation and maintenance manual. Include methods for maintaining finishes, precautions for cleaning materials and methods that could be detrimental to finishes and performance, as well as proper use, care and maintenance of controls and system operation.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Obtain roller shades through one source from a single manufacturer with a minimum of twenty years experience in manufacturing products comparable to those specified in this section.

B. Installer Qualifications: Installer trained and certified by the manufacturer with a minimum of ten years experience in installing products comparable to those specified in this section.

C. Fire-Test-Response Characteristics: Passes NFPA 701-99 small and large-scale vertical burn. Materials tested shall be identical to products proposed for use

D. Anti-Microbial Characteristics: 'No Growth' per ASTM G 21 results for fungi ATCC9642, ATCC 9644, ATCC9645.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver shades and components in original factory packaging with manufacturer, product name, fire-test-response characteristics, lead-free designation, and location of installation using same designations indicated on drawings, clearly visible and legible.

1.7 PROJECT CONDITIONS

A. Field Measurements: Take accurate field measurements before fabrication, and show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.8 WARRANTY

A. Provide a five (5) year warranty against defects in materials and workmanship for clutch operating mechanism, and a one (1) year warranty against defects in materials and workmanship for all other components.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with requirements, manufacturers of products that may be incorporated in this project include, but are not limited to, the following, or approved equal:

1. MechoShade Systems, Inc (Basis of Design)

2.2 SHADE TYPE 1

A. Visually Transparent Single-Fabric Shadecloth: MechoShade Systems, Inc., EuroTwill, Light Charcoal 6462, 6450 Series (3 percent open):

1. Single thickness non-raveling 0.030-inch (0.762 mm) thick vinyl fabric.
2. Woven from 0.018-inch (0.457 mm) diameter extruded vinyl yarn comprising of 25 percent polyester and 75 percent PVC.
3. In colors selected from manufacturer's available range

2.3 SHADE BAND

A. Shade Bands: Construction of shade band includes the fabric, the hem weight, hem-pocket, shade roller tube, and the attachment of the shade band to the roller tube. Sewn hems and open hem pockets are not acceptable

1. Hem Pockets and Hem Weights: Fabric hem pocket with RF-welded seams (including welded ends) and concealed hem weights. Hem weights shall be of appropriate size and weight for shade band. Hem weight shall be continuous inside a sealed hem pocket. Hem pocket construction and hem weights shall be similar, for all shades within one room.

2. Shade band and Shade Roller Attachment:
    a. Use extruded aluminum shade roller tube of a diameter and wall thickness required to support shade fabric without excessive deflection. Roller tubes less than 1.55 inch (39.37 mm) in diameter for manual shades, and less than 2.55 inches (64.77 mm) for motorize shades are not acceptable.
    b. Provide for positive mechanical engagement with drive / brake mechanism.
    c. Provide for positive mechanical attachment of shade band to roller tube; shade band shall be made removable / replaceable with a "snap-on" snap-off" spline mounting, without having to remove shade roller from shade brackets.
    d. Mounting spline shall not require use of adhesives, adhesive tapes, staples, and/or rivets.
    e. Any method of attaching shade band to roller tube that requires the use of: adhesive, adhesive tapes, staples, and/or rivets are not acceptable.

2.4 SHADE FABRICATION

A. Fabricate units to completely fill existing openings from head to sill and jamb-to-jamb, unless specifically indicated otherwise.

B. Fabricate shadecloth to hang flat without buckling or distortion. Fabricate with heat-sealed trimmed edges to hang straight without curling or raveling. Fabricate unguided shadecloth to roll true and straight without shifting sideways more than 1/8 inch (3.18 mm) in either direction per 8 feet (2438 mm) of shade height due to warp distortion or weave design. Fabricate hem as follows.

1. Bottom hem weights.
2. Concealed hemtube.
3. Exposed blackout hembar with light seal.

C. Provide battens in standard shades as required to assure proper tracking and uniform rolling of the shadebands. Contractor shall be responsible for assuring the width-to-height (W:H) ratios shall not exceed manufacturer's standards or, in absence of such standards, shall be responsible for establishing appropriate standards to assure proper tracking and rolling of the shadecloth within specified standards. Battens shall be roll-formed stainless steel or tempered steel, as required.

2.5 COMPONENTS

A. Access and Material Requirements:

1. Provide shade hardware allowing for the removal of shade roller tube from brackets without removing hardware from opening and without requiring end or center supports to be removed.
2. Provide shade hardware that allows for removal and re-mounting of the shade bands without having to remove the shade tube, drive or operating support brackets.
3. Use only engineered plastics for all plastic components of shade hardware. Styrene based plastics, and /or polyester, or reinforced polyester will not be acceptable.

B. Manual Operated Chain Drive Hardware and Brackets:

1. Provide for universal, regular and offset drive capacity, allowing drive chain to fall at front, rear or non-offset for all shade drive end brackets. Universal offset shall be adjustable for future change.
2. Provide hardware capable for installation of a removable fascia, for both regular and/or reverse roll, which shall be installed without exposed fastening devices of any kind.
3. Provide shade hardware system that allows for removable regular and/or reverse roll fascias to be mounted continuously across two or more shade bands without requiring exposed fasteners of any kind.
4. Provide shade hardware system that allows for operation of multiple shade bands (multi-banded shades) by a single chain operator, subject to manufacturer’s design criteria. Connectors shall be offset to assure alignment from the first to the last shade band.
5. Provide shade hardware system that allows multi-banded manually operated shades to be capable of smooth operation when the axis is offset a maximum of 6 degrees on each side of the plane perpendicular to the radial line of the curve, for a 12 degrees total offset.

6. Provide positive mechanical engagement of drive mechanism to shade roller tube. Friction fit connectors for drive mechanism connection to shade roller tube are not acceptable
7. Provide shade hardware constructed of minimum 1/8-inch (3.18 mm) thick plated steel or heavier as required to support 150 percent of the full weight of each shade.
8. Drive Bracket / Brake Assembly:

    a. MechoShade Drive Bracket model M5 shall be fully integrated with all MechoShade accessories, including, but not limited to: SnapLoc fascia, room darkening side / sill channels, center supports and connectors for multi-banded shades.
    b. M5 drive sprocket and brake assembly shall rotate and be supported on a welded 3/8 inch (9.525 mm) steel pin.
    c. The brake shall be an over -running clutch design which disengages to 90 percent during the raising and lowering of a shade. The brake shall withstand a pull force of 50 lbs. (22 kg) in the stopped position.
    d. The braking mechanism shall be applied to an oil-impregnated hub on to which the brake system is mounted. The oil impregnated hub design includes an articulated brake assembly, which assures a smooth, non-jerky operation in raising and lowering the shades. The assembly shall be permanently lubricated. Products that require externally applied lubrication and or not permanently lubricated are not acceptable.
    e. The entire M5 assembly shall be fully mounted on the steel support bracket, and fully independent of the shade tube assembly, which may be removed and reinstalled without effecting the roller shade limit adjustments.

C. Drive Chain: #10 qualified stainless steel chain rated to 90 lb. (41 kg) minimum breaking strength. Nickel plate chain shall not be accepted.

2.6 ACCESSORIES

A. Roller Shade Pocket for surface mounting in acoustical tile, or drywall ceilings as indicated on the Drawings (for Shade Type 1).

1. Provide either extruded aluminum and or formed steel shade pocket, sized to accommodate roller shades, with exposed extruded aluminum closure mount, tile support and removable closure panel to provide access to shades

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.

1. 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, and located so shade band is not closer than 2 inches (50 mm) to interior face of glass. Allow clearances for window operation hardware.

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 ensure that roller shades are without damage or deterioration at time of Substantial Completion Installer that.

C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

END OF SECTION 122413