

PORTAGE PUBLIC SCHOOLS NORTHERN AND CENTRAL HIGH SCHOOL AUDITORIUM IMPROVEMENTS

PROJECT MANUAL

05/25/2022

OWNER

**PORTAGE PUBLIC SCHOOLS
8107 MUSTANG DRIVE
PORTAGE, MI 49002**

PROJECT NUMBER

Architect's Project No. 22-103.00

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TABLE OF CONTENTS

DIVISION 00 — PROCUREMENT AND CONTRACTING REQUIREMENTS

- 00 1113 - ADVERTISEMENT FOR BIDS
- 00 2113 - INSTRUCTIONS TO BIDDERS
- 00 4100 - BID FORM
- 00 4518 - FAMILIAL STATEMENT OF DISCLOSURE
- 00 4519 - NONCOLLUSION AFFIDAVIT
- 00 7343 - WAGE RATE REQUIREMENTS

DIVISION 01 — GENERAL REQUIREMENTS

- 01 1000 - SUMMARY
- 01 2600 - CONTRACT MODIFICATION PROCEDURES

DIVISION 02 — EXISTING CONDITIONS

- 02 4119 - SELECTIVE DEMOLITION

DIVISION 03 — CONCRETE

NOT USED

DIVISION 04 — MASONRY

NOT USED

DIVISION 05 — METALS

NOT USED

DIVISION 06 — WOOD, PLASTICS, AND COMPOSITES

- 06 1000 - ROUGH CARPENTRY

DIVISION 07 — THERMAL AND MOISTURE PROTECTION

NOT USED

DIVISION 08 — OPENINGS

NOT USED

DIVISION 09 — FINISHES

09 2613 - GYPSUM VENEER PLASTERING
09 6400 - WOOD FLOORING
09 9123 - INTERIOR PAINTING sf0

DIVISION 10 — SPECIALTIES

NOT USED

DIVISION 11 — EQUIPMENT

NOT USED

DIVISION 12 — FURNISHINGS

12 6100 - FIXED AUDIENCE SEATING

DIVISION 13 — SPECIAL CONSTRUCTION

NOT USED

DIVISION 14 — CONVEYING EQUIPMENT

NOT USED

DIVISION 21 — FIRE SUPPRESSION

NOT USED

DIVISION 22 — PLUMBING

NOT USED

DIVISION 23 — HEATING VENTILATING AND AIR CONDITIONING

NOT USED

DIVISION 25 — INTEGRATED AUTOMATION

NOT USED

DIVISION 26 — ELECTRICAL

26 5561 - THEATRICAL LIGHTING

**PROJECT NO. 22-103.00
NORTHERN AND CENTRAL HIGH SCHOOL AUDITORIUM IMPROVEMENTS
PORTAGE PUBLIC SCHOOLS**

**TABLE OF CONTENTS
3
05/25/2022**

DIVISION 27 — COMMUNICATIONS

27 4116 - INTEGRATED AUDIO VIDEO SYSTEMS AND EQUIPMENT

DIVISION 28 — ELECTRONIC SAFETY AND SECURITY

NOT USED

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SECTION 00 1113 - ADVERTISEMENT FOR BIDS

Notice is hereby given that bids will be received via sealed bid or electronic submission to:

By: Portage Public Schools
Att: Kristina Lafferty
8107 Mustang Drive
Portage, MI 49002
klafferty@portageps.org

Bids must be received no later than 1:30 p.m., Tuesday, June 7, 2022

For: Portage Public Schools – Northern High School Auditorium Refresh
Portage Public Schools – Central High School Auditorium Refresh

Bids will be received and publicly opened and read at the Portage Public Schools Administration Building, 8107 Mustang Drive, Portage, Michigan 49002.

All work for the complete construction of the Project will be under one prime contract.

Project Description: Remove and replace wood stage floor, miscellaneous patching and painting, lighting control and sound system upgrades.

Bid Documents will be available May 18, 2022 Electronic PDF Copies for can be obtained by request. Contact the office of the Architect. Att: Mike Galovan, mgalovan@towerpinkster.com.

All questions shall be emailed to Steve Phelps, PPS Facilities Manager (sphelps@portageps.org) and Mike Galovan, TowerPinkster Project Manager (mgalovan@towerpinkster.com).

As required by State Law (P.A. 232 of 2004), all bids shall be accompanied by the following disclosure statements; Noncollusion Affidavit, Iran Economic Sanctions Act and Certification Regarding Responsibility Matters. Notarized disclosure statements are required for recommendation to the School Board for Award.

Bidders will be required to provide Bid security in the form of a surety bond, certified check, or cashier's check in the amount of 5 percent of the bid amount. Performance and Payment bonds will be required.

A mandatory pre-bid meeting is not planned for this project. It is encouraged that interested bidders contact the Architect to set up a time to review the site conditions.

No bids may be withdrawn for a period of 30 days after submission.

The Owner reserves the right to accept or reject any or all bids, alternates, or proposals, and to accept those bids, alternates, or proposals that, in their judgment, serve the District's best interests.

END OF DOCUMENT 00 1113

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SECTION 00 2113 - INSTRUCTIONS TO BIDDERS

FORM OF INSTRUCTIONS TO BIDDERS

See AIA Document A701 (1997 Edition), Instructions to Bidders, issued by the American Institute of Architects. It is an integral part of the Bidding Documents but is not bound in the Project Manual. Refer to this document for pertinent information. Failure to consult this document shall not relieve the Bidder of its obligations therein. Copies of this document may be viewed at the office of the Architect, and may be purchased at the following location:

AIA Michigan
4219 Woodward Avenue
Detroit, MI 48201
(313) 965-4100

The instructions in this document amend or supplement the Instructions to Bidders and other provisions of the Bidding and Contract Documents. Where any Article of the Instructions to Bidders is modified, or any paragraph, sub-paragraph or clause thereof is modified or deleted by these supplements, the unaltered provisions of that article, paragraph, sub-paragraph, or clause shall remain in effect.

ARTICLE 1 – DEFINITIONS

Make the following revisions to paragraph 1.1:

- 1.1 In the first and second sentences, replace the phrase "Bidding Requirements" with the phrase "Procurement Requirements." In the second sentence replace the words "and contract forms" with the word "forms." In the third sentence, after the words replace the words "Conditions of the Contract" with the words "contracting forms, Conditions of the Contract."

ARTICLE 2 – BIDDER'S REPRESENTATIONS

Add the following clause 2.1.3.1 to subparagraph 2.1.3:

- .1 The Bidder has investigated all required fees, permits, and regulatory requirements of authorities having jurisdiction (State of Michigan Bureau of Construction Codes) and has properly included in the submitted bid the cost of such fees, permits, and requirements not otherwise indicated as provided by Owner.

ARTICLE 3 – BIDDING DOCUMENTS

3.3 SUBSTITUTIONS

Add the following Sub-paragraph 3.3.5:

- 3.3.5 Voluntary alternates shall be presented on the Bidder's letterhead, together with the amount to be deducted from, or added to, his proposal. The Owner may accept or reject such voluntary alternates based upon his best judgement of value.

ARTICLE 4 – BIDDING PROCEDURE

4.1 PREPARATION OF BIDS

Add the following clause 4.1.1.1 to subparagraph 4.1.1:

- .1 Submit two fully executed copies of the bid, including all required attachments.

Add the following Subparagraph 4.1.8:

- 4.1.8 The Bid shall include unit prices when called for by the Procurement and Contracting Documents. Owner may elect to consider unit prices in the determination of award. Unit prices will be incorporated into the Contract.

4.2 BID SECURITY

Omit the last sentence of Subparagraph 4.2.1.

Add the following Subparagraph 4.2.4:

- 4.2.4 Bid security equal to 5 percent of the bid shall be provided in the form of a surety bond, certified check, or cashier's check made payable to the Owner.

4.4 MODIFICATION OR WITHDRAWAL OF BID

Add the following clauses to Subparagraph 4.4.2:

- .1 Such modifications to or withdrawal of a bid may only be made by persons authorized to act on behalf of the Bidder. Authorized persons are those so identified in the Bidder's corporate bylaws, specifically empowered by the Bidder's charter or similar legally binding document acceptable to Owner, or by a power of attorney, signed and dated, describing the scope and limitations of the power of attorney. Make such documentation available to Owner at the time of seeking modifications or withdrawal of the Bid.
- .2 Owner will consider modifications to a bid written on the sealed bid envelope by authorized persons when such modifications comply with the following: the modification is indicated by a percent or stated amount to be added to or deducted from the Bid; the amount of the Bid itself is not made known by the modification; a signature of the authorized person, along with the time and date of the modification, accompanies the modification. Completion of an unsealed bid form, awaiting final figures from the Bidder, does not require power of attorney due to the evidenced authorization of the Bidder implied by the circumstance of the completion and delivery of the Bid.

ARTICLE 5 – CONSIDERATION OF BIDS

Add the following subparagraph 5.2.1 to paragraph 5.1:

- 5.2.1 Owner reserves the right to reject a bid based on Owner's and Architect's evaluation of qualification information submitted following opening of bids. Owner's evaluation of the Bidder's qualifications will include: status of licensure and record of compliance with licensing requirements, record of quality of completed work, record of Project completion and ability to complete, record of financial management including financial resources available to complete Project and record of timely payment of obligations, record of Project site management including compliance with requirements of authorities having

jurisdiction, record of and number of current claims and disputes and the status of their resolution, and qualifications of the Bidder's proposed Project staff and proposed subcontractors.

ARTICLE 6 – POST BID INFORMATION

6.2 OWNER'S FINANCIAL CAPABILITY

Omit Paragraph 6.2.

6.3 SUBMITTALS

Replace Subparagraph 6.3.1 with the following:

6.3.1 All bidders whose bid is under consideration shall submit, within 48 hours of bid opening, a Schedule of Values listing all subcontractors proposed for the Work and the following:

- .1 A designation of the Work to be performed with the Bidder's own forces.
- .2 Names of the manufacturers, products, and the suppliers of principal items or systems of materials and equipment proposed for the Work.

ARTICLE 7 – PERFORMANCE BOND AND PAYMENT BOND

7.1 BOND REQUIREMENTS

Add the following Subparagraph 7.1.4:

7.1.4 Performance and Payment Bonds in the amount of 100 percent of the Contract amount will be required.

ARTICLE 9 – ADDITIONAL ITEMS

9.1 EXECUTION OF THE CONTRACT

9.1.1 Subsequent to the Notice of Intent to Award, and within ten [10] days after the prescribed Form of Agreement is presented to the Awardee for signature, the Awardee shall execute and deliver the Agreement to Owner through Architect in such number of counterparts as Owner may require.

9.1.2 Owner may deem as a default the failure of the Awardee to execute the Contract and to supply the required bonds when the Agreement is presented for signature within the period of time allowed.

9.1.3 Unless otherwise indicated in the Procurement and Contracting Documents or the executed Agreement, the date of commencement of the Work shall be the date of the executed Agreement

9.2 PRE-BID MEETING

A mandatory pre-bid meeting is not planned for this project. It is encouraged that interested bidders contact the Architect to set up a time to review the site conditions.

END OF DOCUMENT 00 2113

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SECTION 00 4100 - BID FORM

THE PROJECT AND THE PARTIES:

TO: Portage Public Schools (the Owner)
8107 Mustang Drive
Portage, Michigan 49002

FOR: Portage Public Schools – High School Auditorium Refresh

DATE: _____ (Bidder to enter date)

SUBMITTED BY: (Bidder to enter name and address)

Bidders Full Name _____

Address _____

City, State, and Zip _____

Phone Number _____

Email address _____

OFFER

PORTAGE NORTHERN HIGH SCHOOL

Having examined the Place of the Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by Tower Pinkster Titus Associates for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sum of:

_____ Dollars (\$ _____)
in lawful money of the United States of America.

PORTAGE CENTRAL HIGH SCHOOL

Having examined the Place of the Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by Tower Pinkster Titus Associates for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sum of:

_____ Dollars (\$ _____)
in lawful money of the United States of America.

- We have included the required security as required by the Instruction to Bidders.
- All applicable taxes are included in the Bid Sum.
- Fully executed Document 00 4519 – Noncollusion Affidavit is attached.
- Fully executed Document 00 4546 – Governmental Certifications form is attached

ACCEPTANCE

This offer shall be open to acceptance and is irrevocable for thirty days from the bid closing date. If this bid is accepted by the Owner within the time period stated above, we will:

- Execute the Agreement within seven days of receipt of Notice of Award.
- Furnish the required bonds within seven days of receipt of Notice of Award.
- Commence work within seven days after written Notice to Proceed of this bid.

If this bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required Bond(s), the security deposit shall be forfeited as damages to the Owner by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this bid and the bid upon which a Contract is signed.

In the event our bid is not accepted within the time stated above, the required security deposit shall be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

CONTRACT TIME

If this Bid is accepted, work can begin as soon as:
June 30, 2022.

Work shall be completed

Work schedule is dependent on availability of materials, schedules will need to be determined to allow for each facility to be occupiable when school open in the fall. Work can be scheduled after the start of the school year in the fall of 2022, provided work is coordinated with the district to minimize disruption.

ADDENDA

The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum.

BID FORM SUPPLEMENTS

We agree to submit the following Supplements to Bid Forms if requested by the Architect within 48 hours after submission of this bid for additional bid information:

- Schedule of Values: Include the names of all Subcontractors and the portions of the Work they will perform.

**PROJECT NO. 22-103.00
NORTHERN AND CENTRAL HIGH SCHOOL AUDITORIUM IMPROVEMENTS
PORTAGE PUBLIC SCHOOLS**

**BID FORM
00 4100 - 3
05/25/2022**

BID FORM SIGNATURE(S)

The Corporate Seal of

.....
(Bidder - print the full name of your firm)

was hereunto affixed in the presence of:

.....
(Authorized signing officer, Title)

(Seal)

.....
(Authorized signing officer, Title)

IF THE BID IS A JOINT VENTURE OR PARTNERSHIP ADD ADDITIONAL FORMS OF EXECUTION FOR EACH MEMBER OF THE JOINT VENTURE IN THE APPROPRIATE FORM OR FORMS AS ABOVE.

END OF DOCUMENT 00 4100

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SECTION 00 4518 - FAMILIAL STATEMENT OF DISCLOSURE

THE PROJECT AND THE PARTIES:

TO: Portage Public Schools

SUBMITTED BY: (Bidder to enter name)

Bidder's Full Name _____

REPRESENTATION

Affiant, "the Bidder," has personal knowledge of the matters set forth in this Affidavit, is competent to testify about them, and being first duly sworn, deposes and says that:

1. No officer or employee of the Owner is personally or financially interested, directly or indirectly, in the Bid, or any Contract which may be under it, or in the purchase or sale of any materials, equipment or supplies for the Work to which it relates, or any portion of any expected profits thereto. In compliance with Michigan Public Act 232 of 2004, any familial relationship that exists between the Owner or any employee of the Bidder and any member of the Owner's Board of Directors is disclosed below. If no familial relationship exists, write "none."

2. The Bid is not intended to secure an unfair advantage or benefit from the Owner or in favor of any person interested in the proposed Contract.

By:

.....
(Authorized signing officer, Title)

VERIFICATION

STATE OF MICHIGAN

COUNTY OF _____

Before me, a Notary Public commissioned, qualified and acting, personally appeared (enter name of the person signing this Affidavit) _____ to me well known to be the person described in and who signed this Noncollusion Affidavit, who being by me first duly sworn upon oath, says that he/she is the Attorney-in-Fact for (enter Bidder's name) _____ - _____, that he/she has been authorized by (enter name of individual, partnership name, or the authorized governing body of the Bidder) _____ to execute this Noncollusion Affidavit on behalf of the named Bidder in favor of the Owner, for the uses and purposes mentioned.

Subscribed and sworn to before me this ____ day of _____, 20____.

Notary Public, State of Michigan

My Commission expires: _____, 20____

END OF DOCUMENT 00 4518

SECTION 00 4519 - NONCOLLUSION AFFIDAVIT

THE PROJECT AND THE PARTIES:

TO: Portage Public Schools

SUBMITTED BY: (Bidder to enter name)

Bidder's Full Name _____

REPRESENTATION

Affiant, "the Bidder," has personal knowledge of the matters set forth in this Affidavit, is competent to testify about them, and being first duly sworn, deposes and says that:

1. The Bidder has submitted to the Owner a "Bid" to enter into the above referenced Contract, also referred to in this Affidavit as "the Work."
2. This Noncollusion Affidavit is executed by Affiant for inclusion with the submission to the Owner of the Bid and may be relied upon by the Owner in considering the Bid.
3. Affiant is fully informed about the preparation and contents of the Bid and of all pertinent circumstances surrounding the Bid, has not entered into any contract, combination, conspiracy or other act prohibited by federal, State or any other local Law. The Bid is genuine and is not a collusive or sham Bid.
4. Neither the Bidder nor any of the Bidder 's owners, officers, partners, directors, agents, representatives, employees or parties in interest, including this Affiant, have in any way entered or proposed to enter into any combination to prevent the making of any Bid, or to fix any prices (including overhead, profit or other costs) for the Bid; or have made any agreement, or given or promised any consideration to induce any other person not to Bid for the Work, or to Bid at a specified price; or have secured, proposed or intended to secure through any agreement an unlawful advantage against the Owner or any other person interested in the Work.
5. No officer or employee of the Owner is personally or financially interested, directly or indirectly, in the Bid, or any Contract which may be under it, or in the purchase or sale of any materials, equipment or supplies for the Work to which it relates, or any portion of any expected profits thereto. In compliance with Michigan Public Act 232 of 2004, any familial relationship that exists between the Owner or any employee of the Bidder and any member of the Owner's Board of Directors is disclosed below. If no familial relationship exists, write "none."

6. The Bid is not intended to secure an unfair advantage or benefit from the Owner or in favor of any person interested in the proposed Contract.
7. The prices bid are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the Bidder or any other of the Bidder's owners, officers, partners, directors, agents, representatives, employees or parties in interest, including this Affiant; and neither the Bidder nor any of its owners, officers, partners, directors, agents, representatives, employees or parties in interest, including this Affiant, have divulged any information regarding the Bid or any data about the Bid to any other person.

By:

.....
(Authorized signing officer, Title)

VERIFICATION

STATE OF MICHIGAN

COUNTY OF _____

Before me, a Notary Public commissioned, qualified and acting, personally appeared (enter name of the person signing this Affidavit) _____ to me well known to be the person described in and who signed this Noncollusion Affidavit, who being by me first duly sworn upon oath, says that he/she is the Attorney-in-Fact for (enter Bidder's name) _____ - _____, that he/she has been authorized by (enter name of individual, partnership name, or the authorized governing body of the Bidder) _____ to execute this Noncollusion Affidavit on behalf of the named Bidder in favor of the Owner, for the uses and purposes mentioned.

Subscribed and sworn to before me this _____ day of _____, 20_____.

Notary Public, State of Michigan

My Commission expires: _____, 20__

END OF DOCUMENT 00 4519

**PROJECT NO. 22-103.00
NORTHERN AND CENTRAL HIGH SCHOOL AUDITORIUM IMPROVEMENTS
PORTAGE PUBLIC SCHOOLS**

**WAGE RATE REQUIREMENTS
00 7343 - 1
05/25/2022**

SECTION 00 7343 - WAGE RATE REQUIREMENTS

PREVAILING WAGE REQUIREMENTS

Payment of a minimum of the prevailing wage rate is not a requirement of this project.

END OF DOCUMENT 00 7343

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SECTION 01 1000 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Access to site and Construction Phasing
4. Coordination with occupants.
5. Work restrictions.
6. Specification and drawing conventions.

1.2 PROJECT INFORMATION

A. Project Identification:

1. Portage Northern High School
1000 Idaho Street
Portage, Michigan 49024
2. Portage Central High School
8135 South Westnedge Ave.
Portage, Michigan 49024

B. Owner:

Portage Public Schools
8107 Mustang Drive
Portage, Michigan 49002

Steve Phelps – Portage Public School, Facilities Manager
2501 Zylman Road
Portage, Michigan 49002
sphelps@portageps.org

C. Architect:

Mike Galovan - Tower Pinkster Titus Associates, Inc.
242 E. Kalamazoo Avenue, Suite 200
Kalamazoo, MI 49007
mgalovan@towerpinkster.com

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and consists of the following:
 - 1. Remove and replace wood stage floor, miscellaneous patching and painting, lighting control and sound system upgrades.
 - 2. Bids will be broken out for each building.
- B. Type of Contract.
 - 1. Project will be constructed under a single prime contract.
- C. State Permits, inspections:
 - 1. The work is considered a Level 1 Rehabilitation according to the Michigan Rehabilitation Code and does not require State of Michigan BCC of BFS permitting or inspection.
- D. Contract Completion:
 - 1. Work schedule is dependent on availability of materials, schedules will need to be determined to allow for each facility to be occupiable when school open in the fall. Work can be scheduled after the start of the school year in the fall of 2022, provided work is coordinated with the district to minimize disruption.

1.4 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.
- 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. Driveways, Walkways and Entrances: Keep driveways loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

1.5 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner will occupy site and existing building(s) during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage of property. 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, corridors, and other occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
 - 2. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations.

- B. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.
 - 1. Before limited Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of Work.
 - 2. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of Work.

1.6 WORK RESTRICTIONS

- A. Contractor may begin work as soon as June 30, 2022.
- B. Work Restrictions, General: Comply with restrictions on construction operations.
 - 1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- C. On-Site Work Hours: To maintain construction schedule, extended working hours is expected. Working hours of 6:00 a.m. to 9:00 p.m., Monday through Saturday, work on Sundays shall be coordinated with the Owner/Architect.
- D. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
 - 1. Notify Owner not less than two days in advance of proposed utility interruptions.
 - 2. Obtain Owner's written permission before proceeding with utility interruptions.
- E. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet (8 m) of entrances, operable windows, or outdoor-air intakes.
- F. Controlled Substances: Use of tobacco products and other controlled substances on Project site is not permitted.

1.7 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.

END OF SECTION 01 1000

SECTION 01 2600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

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

1.2 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."

1.3 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests (Bulletins): Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within time specified in Proposal Request or 20 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
- B. Contractor-Initiated Work Change Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
 - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - 4. Include costs of labor and supervision directly attributable to the change.

5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Division 01 Section "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.

1.4 ADMINISTRATIVE CHANGE ORDERS

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

1.5 CHANGE ORDER PROCEDURES

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

1.6 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 2600

SECTION 02 4119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of site, building or structure.
2. Salvage of existing items to be reused or recycled.

B. Related Requirements:

1. Division 01 Section "Summary" for restrictions on the use of the premises, Owner-occupancy requirements, and phasing requirements.
2. Division 01 Section "Execution" for cutting and patching procedures.

1.2 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.

1.3 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For refrigerant recovery technician.
- B. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and, for noise control. Indicate proposed locations and construction of barriers.
- 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.

- D. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.
- E. Predemolition Photographs or Video: Submit before Work begins.
- F. Warranties: Documentation indicated that existing warranties are still in effect after completion of selective demolition.

1.5 CLOSEOUT SUBMITTALS

- A. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.6 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
1. Hazardous materials will be removed by Owner before start of the Work.
 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. 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.

1.7 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

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. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- D. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
 - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
- E. Survey of Existing Conditions: Record existing conditions by use of measured drawings, preconstruction photographs, preconstruction videotapes, and templates as appropriate.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
 - 1. Comply with requirements for existing services/systems interruptions specified in Division 01 Section "Summary."
 - 2. Provide at least 72 hours' notice to Owner if shutdown of service is required during changeover.
- B. 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. Arrange to shut off indicated utilities with utility companies.

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.
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.

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 Division 01 Section "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.
- 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.

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 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. Related Items: Removal of a component includes the removal of associated items. Removal of a wall or ceiling includes all items mounted to that wall or ceiling.
7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
9. Dispose of demolished items and materials promptly.

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 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, then remove concrete between saw cuts.
- B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
- C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- D. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be 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.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

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 02 4119

SECTION 06 1000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Wood blocking and nailers.
 2. Wood furring.
 3. Wood sleepers.
 4. Plywood backing panels.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
 2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
 3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
 4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

1.3 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.
- B. Evaluation Reports: For the following, from ICC-ES:
1. Wood-preservative-treated wood.
 2. Fire-retardant-treated wood.
 3. Engineered wood products.
 4. Shear panels.
 5. Power-driven fasteners.
 6. Post-installed anchors.
 7. Metal framing anchors.

1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.5 DELIVERY, STORAGE, AND HANDLING

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

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
 - 1. Factory mark each piece of lumber with grade stamp of grading agency.
 - 2. Dress lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.
- C. Engineered Wood Products: Acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.
 - 1. Allowable design stresses, as published by manufacturer, shall meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWWA U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.
 - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

- D. Application: Treat items indicated on Drawings, and the following:
1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
 3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
 4. Wood framing members that are less than 18 inches (460 mm) above the ground in crawlspaces or unexcavated areas.
 5. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where fire-retardant-treated materials are indicated, materials shall comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
- B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.
1. Treatment shall not promote corrosion of metal fasteners.
 2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.
- C. Kiln-dry lumber after treatment to maximum moisture content of 19 percent. Kiln-dry plywood after treatment to maximum moisture content of 15 percent.
- D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.
- E. Application: Treat items indicated on Drawings, and the following:
1. Plywood backing panels.

2.4 DIMENSION LUMBER FRAMING

- A. Non-Load-Bearing Interior Partitions: Construction, Stud, or No. 3 grade.
1. Application: Interior partitions not indicated as load bearing.
 2. Species:
 - a. Southern pine or mixed southern pine; SPIB.
 - b. Northern species; NLGA.
 - c. Eastern softwoods; NeLMA.
 - d. Western woods; WCLIB or WWPA.

- B. Framing Other Than Non-Load-Bearing Partitions: Any species and grade with a modulus of elasticity of at least 1,100,000 psi (7590 MPa) and an extreme fiber stress in bending of at least for 2-inch nominal (38-mm actual) thickness and 12-inch nominal (286-mm actual) width for single-member use.
 - 1. Application: Framing other than interior partitions not indicated as load-bearing.
- C. Exposed Framing: Hand-select material for uniformity of appearance and freedom from characteristics, on exposed surfaces and edges, that would impair finish appearance, including decay, honeycomb, knot-holes, shake, splits, torn grain, and wane.
 - 1. Species and Grade: As indicated above for load-bearing construction of same type.

2.5 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 - 1. Blocking.
 - 2. Nailers.
 - 3. Grounds.
- B. Dimension Lumber Items: Standard, Stud, or No. 3 grade lumber of any species.
- C. Concealed Boards: 19 percent maximum moisture content and any of the following species and grades:
 - 1. Mixed southern pine or southern pine; No. 3 grade; SPIB.
 - 2. Eastern softwoods; No. 3 Common grade; NeLMA.
 - 3. Northern species; No. 3 Common grade; NLGA.
 - 4. Western woods; Standard or No. 3 Common grade; WCLIB or WWPA.
- D. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- E. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
- F. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.6 PLYWOOD BACKING PANELS

- A. Equipment Backing Panels: Plywood, DOC PS 1, Exposure 1, C-D Plugged, fire-retardant treated, in thickness indicated or, if not indicated, not less than 3/4-inch (19-mm) nominal thickness.

2.7 FASTENERS

- A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01 or ICC-ES AC58 as appropriate for the substrate.
 1. Material for Interior Applications: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
 2. Material for Exterior Applications: 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).

2.8 METAL FRAMING ANCHORS

- A. Allowable design loads, as published by manufacturer, shall meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.
- 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.
 1. Use for exterior locations and where indicated.

2.9 MISCELLANEOUS MATERIALS

- A. Sill-Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch (6.4 mm) thick, selected from manufacturer's standard widths to suit width of sill members indicated.
- B. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch (0.6 mm).

- C. 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.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- B. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- C. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant-treated plywood backing panels with classification marking of testing agency exposed to view.
- D. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.
- E. Install sill sealer gasket to form continuous seal between sill plates and foundation walls.
- F. Do not splice structural members between supports unless otherwise indicated.
- G. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
 - 1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches (406 mm) o.c.
- H. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:
 - 1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches (2438 mm) o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
 - 2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches (2438 mm) o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal (38-mm actual) thickness.
 - 3. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq. ft. (9.3 sq. m) and to solidly fill space below partitions.
 - 4. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet (6 m) o.c.
- I. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

- J. Comply with AWP4 M4 for applying field treatment to cut surfaces of preservative-treated lumber.
- K. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- L. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code (IBC).
 - 2. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.
 - 3. ICC-ES evaluation report for fastener.
- M. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.
 - 1. Comply with approved fastener patterns where applicable. Before fastening, mark fastener locations, using a template made of sheet metal, plastic, or cardboard.
 - 2. Use finishing nails unless otherwise indicated. Countersink nail heads and fill holes with wood filler.
 - 3. Use common nails unless otherwise indicated. Drive nails snug but do not countersink nail heads.

3.2 PROTECTION

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

END OF SECTION 06 1000

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SECTION 09 2613 - GYPSUM VENEER PLASTERING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Gypsum veneer plaster and gypsum base for interior veneer plaster patching.

1.2 ACTION SUBMITTALS

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

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages, containers, and bundles bearing brand name and identification of manufacturer or supplier.
- B. Store materials inside under cover, and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes.
- C. Stack panels flat on leveled supports off floor or slab to prevent sagging.

1.4 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 843 requirements or gypsum veneer plaster manufacturer's written recommendations, whichever are more stringent.
- B. Room Temperatures: Maintain not less than 55 deg F (13 deg C) or more than 80 deg F (27 deg C) for seven days before application of gypsum base and gypsum veneer plaster, continuously during application, and after application until veneer plaster is dry.
- C. Avoid conditions that result in gypsum veneer plaster drying too rapidly.
1. Distribute heat evenly; prevent concentrated or uneven heat on veneer plaster.
 2. Maintain relative humidity levels, for prevailing ambient temperature, that produce normal drying conditions.
 3. Ventilate building spaces in a manner that prevents drafts of air from contacting surfaces during veneer plaster application until it is dry.
- D. Do not install panels that are wet, moisture damaged, mold damaged, or faded from overexposure to sunlight.
1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, and irregular shape.

2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain gypsum veneer plaster products, including gypsum base for veneer plaster, joint reinforcing tape, and embedding material, from single manufacturer.

2.2 GYPSUM VENEER PLASTER

- A. Two-Component Gypsum Veneer Plaster: ASTM C 587, with separate formulations; one for base-coat application and one for finish-coat application over substrates.

1. Base Coat:

- a. Products: Subject to compliance with requirements, provide one of the following:

- 1) National Gypsum Company; Kal-Kote Plaster Base.
- 2) United States Gypsum Company; Diamond Veneer Basecoat Plaster.

2. Smooth Finish Coat:

- a. Products: Subject to compliance with requirements, provide one of the following:

- 1) National Gypsum Company; Kal-Kote Smooth Finish.
- 2) United States Gypsum Company; USG Diamond Interior Finish Plaster.

2.3 PANEL PRODUCTS

- A. Panel Size: Provide panels in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

- B. Gypsum Base for Veneer Plaster: ASTM C 1396/C 1396M.

1. Products: Subject to compliance with requirements, provide one of the following:

- a. Continental Building Products, LLC; Plasterbase.
- b. Georgia-Pacific Building Products; Tough Rock Veneer Plaster Base.
- c. National Gypsum Company; Kal-Core Regular.
- d. United States Gypsum Company; Imperial Regular Gypsum Base.

2. Thickness: 1/2 inch (12.7 mm).

2.4 TRIM ACCESSORIES

- A. Standard Trim: ASTM C 1047, approved for use in gypsum veneer plaster applications indicated.
 - 1. Material: Galvanized-steel sheet, aluminum-coated steel sheet, or rolled zinc.
 - 2. Shapes:
 - a. Cornerbead.
 - b. LC-Bead: J-shaped; exposed long flange receives veneer plaster.
 - c. Control joints.

2.5 JOINT-REINFORCING MATERIALS

- A. General: Comply with joint strength requirements in ASTM C 587 and with gypsum veneer plaster manufacturer's written recommendations for each application indicated.
- B. Joint Tape: Paper.
- C. Embedding Material for Joint Tape: As recommended by gypsum veneer plaster manufacturer for use with joint-tape material and gypsum veneer plaster applications indicated.

2.6 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced product standards and manufacturer's written recommendations.
- B. Bonding Agent: ASTM C 631 polyvinyl acetate.
- C. Steel Drill Screws: ASTM C 1002 unless otherwise indicated.
 - 1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.

PART 3 - EXECUTION

3.1 INSTALLING PANELS, GENERAL

- A. Gypsum Base for Veneer Plaster: Apply according to ASTM C 844 unless manufacturer's written recommendations are more stringent.
 - 1. Erection Tolerance: No more than 1/16-inch (1.6-mm) offsets between planes of gypsum base panels, and 1/8 inch in 8 feet (3 mm in 2.4 m) noncumulative, for level, plumb, warp, and bow.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, or mold damaged.
- C. Install sound attenuation blankets before installing gypsum base for veneer plaster.

- D. Trim: Install trim with back flanges intended for fasteners, and attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- E. Control Joints: Install according to ASTM C 844 and in specific locations approved by Architect.
- F. Gypsum Base: Reinforce interior angles and flat joints with joint tape and embedding material to comply with ASTM C 843 and with gypsum veneer plaster manufacturer's written recommendations.
- G. Fasteners: Drive fasteners flush with gypsum base surface. Do not overdrive fasteners or cause surface depressions.
- H. Single-Layer Fastening Methods: Apply gypsum base panels to supports with steel drill screws.

3.2 INSTALLING TRIM ACCESSORIES

- A. General: Install trim with back flanges intended for fasteners, and attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Control Joints: Install according to ASTM C 844 and in specific locations approved by Architect.

3.3 GYPSUM VENEER PLASTERING

- A. Gypsum Veneer Plaster Mixing: Mechanically mix gypsum veneer plaster materials to comply with ASTM C 843 and with gypsum veneer plaster manufacturer's written recommendations.
 - 1. Two-Component Gypsum Veneer Plaster:
 - a. Base Coat: Hand trowel or machine apply base coat over substrate to a uniform thickness of 1/16 to 3/32 inch (1.6 to 2.4 mm). Fill voids and imperfections.
 - b. Finish Coat: Trowel apply finish-coat plaster over base-coat plaster to a uniform thickness of 1/16 to 3/32 inch (1.6 to 2.4 mm).
 - 2. Where gypsum veneer plaster abuts metal, including doorframes, windows and other units, groove finish coat to eliminate spalling.
 - 3. Do not apply veneer plaster to gypsum base if paper facing has degraded from exposure to sunlight. Before applying veneer plaster, use remedial methods to restore bonding capability to degraded paper facing according to manufacturer's written recommendations and as approved by Architect.
- B. Gypsum Veneer Plaster Finish: Smooth-troweled finish unless otherwise indicated.

END OF SECTION 09 2613

SECTION 09 6400 - WOOD FLOORING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Field-finished wood flooring.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For each type of floor assembly and accessory. Include plans, sections, and attachment details. Include expansion provisions and trim details.

1.3 FIELD CONDITIONS

- A. Conditioning period begins not less than seven days before wood flooring installation, is continuous through installation, and continues not less than seven days after wood flooring installation.
1. Environmental Conditioning: Maintain ambient temperature between 65 and 75 deg F (18 and 24 deg C) and relative humidity planned for building occupants in spaces to receive wood flooring during the conditioning period.
 2. Wood Flooring Conditioning: Move wood flooring into spaces where it will be installed, no later than the beginning of the conditioning period.
 - a. Do not install flooring until it adjusts to relative humidity of, and is at same temperature as, space where it is to be installed.
 - b. Open sealed packages to allow wood flooring to acclimatize immediately on moving flooring into spaces in which it will be installed.
- B. After conditioning period, maintain relative humidity and ambient temperature planned for building occupants.
- C. Install factory-finished wood flooring after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 FIELD-FINISHED WOOD FLOORING

- A. Products: Refer to interior painting spec section

2.2 FIELD-FINISHED WOOD FLOORING

- A. Wood Sleepers: Standard grade; minimum 96 inches(2400 mm) long; kiln-dried Eastern hemlock, fir, pine, or spruce; preservative treated by immersion according to MFMA's written recommendations.
 - 1. Size: Nominal 2 by 4 inches(50 by 100 mm).
- B. Vapor Retarder: ASTM D4397, polyethylene sheet not less than **6.0 mils** thick.
- C. Wood Underlayment: Plywood Subflooring: APA rated, C-D Plugged, exterior glue, 3/4 inch thick
- D. Wood Top Layer: Plywood to layer: APA rated, C-D Plugged, exterior glue, 1/2 inch thick
- E. #15 felt underlayment.
- F. Finish floor: 1/4" double tempered hardboard (painted black both sides).
- G. Wall Base Molded, vented, "L"-shaped, rubber or vinyl cove base, 4 by 3 inches(101 by 76 mm); with premolded outside corners.
 - 1. Color: Black.
- H. Thresholds: Aluminum; 1/8 inch(3 mm) thick with beveled edges, black anodized finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Concrete Slabs:
 - 1. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft. (18.6 sq. m), and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
 - a. Relative Humidity Test: Using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
 - b. Perform additional moisture tests recommended by manufacturer. Proceed with installation only after substrates pass testing.

3.2 PREPARATION

- A. Concrete Slabs:
 - 1. Grind high spots and fill low spots to produce a maximum 1/8-inch (3-mm) deviation in any direction when checked with a 10-foot (3-m) straight edge.
 - 2. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, and depressions in substrates.

3. Remove coatings, including curing compounds, and other substances on substrates that are incompatible with installation adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

- B. Broom or vacuum clean substrates to be covered immediately before product installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 INSTALLATION

- A. Stage Floor: Tempered hardboard on two layers of subflooring on vapor retarder on sleepers as follows:
 1. Vapor Retarder: Install with joints lapped a minimum of 6 inches(150 mm) and sealed. Place over sleepers.
 2. Subfloor: Provide two layers of subflooring as follows:
 - a. Glue and screw first layer to sleepers. Orient in running bond pattern perpendicular to sleepers. Space screws at 12 inches(305 mm) on center maximum.
 - b. Glue and screw second layer of subfloor to first layer oriented 45 degrees from first layer and set in running bond pattern. Space screws at 8 inches(203 mm) on center maximum at edges and 12 inches(305 mm) maximum in field.
3. Apply a layer of felt on subfloor.
4. Finish floor:
 - a. Do not use adhesives.
 - b. Rosco Tough Prime Black, or equal finish paint. See interior painting spec.
 - c. 16ga pneumatic straight brad nailer and 1¼" – 2" nails
 - d. Store the sheets of hardboard on the stage for several days immediately after delivery.
 - e. Lay out the sheets of hardboard and paint all of them on one face with black paint.
 - f. Once one side is fully cured flip the sheets over and paint them on what will be the top side and on the edges with black paint. Allow to fully cure before handling.
 - g. Snap a chalk line on the existing stage floor between the back of the proscenium arch legs left and right. Then snap a line that runs all the way upstage-downstage on centerline. These two lines will serve as guides for laying out the sheets of hardboard. When it is all done, the resulting layout will give you a centerline and plasterline to reference via the seams between sheets (great for blocking, scenery placement and lighting focus.)
 - h. Roll out felt as an underlayment to the hardboard. Overlap by a few inches and use minimal amounts of masking tape to keep them together and in place. This will serve as a barrier between the stage floor and hardboard.
 - i. Starting downstage center, at the intersection of your chalk lines, lay out the sheets of hardboard going up one side of centerline, then along the upstage side of plasterline out to the left and to the right towards the wings.
 - j. Provide a 1/16" minimum gap at all sides of each sheet
 - k. Nail the sheets down with 16ga.
 - l. Let the floor acclimate for another 24 hours before taking the next step. Keep anyone from using the stage or even walking across it
 - m. After 24 hours use one brad nail in the middle of any bumps in the top layer to put it back down. Keep your use of extra nails to a minimum.
 - n. Paint the entire stage floor again with black paint.
 - o. Allow a full 24 hours before applying a sealer.
 - p. Finally Roll out a coat of clear sealant to protect the color and the hardboard sheets

- q. Allow 24 hours to cure.

3.4 FIELD FINISHING

- A. Machine-sand flooring to remove offsets, ridges, cups, and sanding-machine marks that are noticeable after finishing. Vacuum and tack with a clean cloth immediately before applying finish.
- B. Fill and repair wood flooring defects.
- C. Apply floor-finish per painting specification section.
- D. Do not cover wood flooring after finishing until finish reaches full cure.

3.5 PROTECTION

- A. Protect installed wood flooring during remainder of construction period with covering of heavy kraft paper or other suitable material. Do not use plastic sheet or film that might cause condensation.
 - 1. Do not move heavy and sharp objects directly over kraft-paper-covered wood flooring. Protect flooring with plywood or hardboard panels to prevent damage from storing or moving objects over flooring.

END OF SECTION 09 6400

SECTION 09 9123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes surface preparation and the application of paint systems on **the following interior substrates:**
1. Wood.
 2. Plaster.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
- B. Samples for Verification: For each type of paint system and in each color and gloss of topcoat.
1. Submit Samples on rigid backing, 8 inches (200 mm) square.
 2. Apply coats on Samples in steps to show each coat required for system.
 3. Label each coat of each Sample.
 4. Label each Sample for location and application area.
- C. Product List: Use same designations indicated on Drawings and in the Interior Painting Schedule to cross-reference paint systems specified in this Section. Include color designations.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Paint: 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
1. Maintain containers in clean condition, free of foreign materials and residue.
 2. Remove rags and waste from storage areas daily.

1.6 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures of less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 PAINT, GENERAL

- A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products List."
- B. Material Compatibility:
 - 1. Materials for use within each paint system shall be 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 system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
- C. Colors: Black

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Concrete: 12 percent.
 - 2. Fiber-Cement Board: 12 percent.
 - 3. Masonry (Clay and CMUs): 12 percent.
 - 4. Wood: 15 percent.
 - 5. Gypsum Board: 12 percent.
 - 6. Plaster: 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
 - 1. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
 - 2. Plaster Substrates: Verify that plaster is fully cured.
 - 3. Spray-Textured Ceiling Substrates: Verify that surfaces are dry.

- D. Proceed with coating application only after unsatisfactory conditions have been corrected.
 - 1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 - 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. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
 - 2. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
 - 3. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.
 - 4. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer.
 - 5. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
 - 6. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
 - 7. Aluminum Substrates: Remove loose surface oxidation.
 - 8. Wood Substrates:
 - a. Scrape and clean knots, and apply coat of knot sealer before applying primer.
 - b. Sand surfaces that will be exposed to view, and dust off.
 - c. Prime edges, ends, faces, undersides, and backsides of wood.
 - d. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.
 - 9. Cotton or Canvas Insulation Covering Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

3.3 INSTALLATION

- A. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Architect will select from standard colors and finishes available.
 - 1. Existing Buildings: Where new finishes are indicated in existing spaces, paint all existing previously painted items including but not limited to, doors and frames, fire extinguisher cabinets, mechanical devices, electrical panels, and similar items.
- B. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 - 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 - 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 - 5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 INTERIOR PAINTING SCHEDULE

- A. Wood Substrates: Stage floor, plywood and hardboard.
 - 1. Acrylic System:

- a. Prime Coat: Primer sealer,
 - 1) Rocso – “tough prime” – Black primer – or equal.
 - b. Intermediate Coat: Floor paint, latex, matching topcoat.
 - 1) Rocso – “top coat” – Black – or equal
 - c. Topcoat:
 - 1) Rocso – “clear Flat Acrylic sealer” – or equal.
- B. Plaster Ceiling Substrates:
- 1. Latex over Latex Sealer System: Match existing color
 - a. Prime Coat: Primer sealer, latex, interior
 - b. Prime Coat: Latex, interior, matching topcoat.
 - c. Intermediate Coat: Latex, interior, matching topcoat.
 - d. Topcoat: Latex, matching existing color

END OF SECTION 09 9123

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SECTION 12 6100 - FIXED AUDIENCE SEATING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes fixed, chair-type seating with the following:
 - 1. Aisle Lighting Accessories

1.2 COORDINATION

- A. Coordinate layout and installation of electrical wiring and devices with seating layout to ensure that floor junction boxes for electrical devices are accurately located to allow connection without exposed conduit.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:
 - 1. Aisle Lighting: Full-size unit.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.5 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of fixed audience seating that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Faulty operation of electrical components.
 - 2. Warranty Periods: As follows, from date of Substantial Completion.
 - a. Electrical Components: **Five** years.

PART 2 - PRODUCTS

2.1 AISLE LIGHTING

- 1. Aisle-Lighting Fixtures: provide replacement aisle lighting for floor areas identified. Aisle lighting system to match existing.

- a. LED
- b. Low Voltage

2.2 MATERIALS AND FINISHES

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install wiring conductors and cables concealed in components of seating and accessible for servicing.

END OF SECTION 12 6100

SECTION 26 5561 - THEATRICAL LIGHTING

PART 1 - GENERAL

1.1 GENERAL DESCRIPTION

- A. The new lighting system will include color mixing LED theatrical light fixtures for the stage, LED general-purpose light fixtures for the back of house area, and LED recessed architectural light fixtures for the house. A power relay panel will be installed stage right near the lighting control rack and will be connected to lighting distribution outputs throughout the auditorium. Stage lighting power circuits for new fixtures will be located on the catwalk and stage electrics.
- B. Control of the theatrical and architectural lighting will be integrated into one system. Lighting controls will consist of push button stations at entrances to the house and stage, a touch screen at stage right, a lighting console and touch screen in the control room, and wireless remote focus of stage lighting via iPad app. The lighting console will serve as primary control of the stage lighting while the push button stations will serve as primary control of architectural lighting. The programmable touch screens will provide access to lighting presets for stage and architectural lights. Presets will be determined in coordination with the Owner.

1.2 SUMMARY OF WORK

- A. Work includes the following, as described in this Specification document, associated project drawings, and any subsequent addenda:
 - 1. Existing lighting and electrical demolition work
 - 2. Provision of professional systems engineering and programming services
 - 3. Provision of accurate and timely project management, including, but not limited to:
 - a. Implementation scheduling
 - b. Coordination with Owner, Construction Manager, Lighting Vendor, and other trades
 - c. Problem identification and resolution
 - d. Installation coordination at site
 - e. Configuration and programming coordination
 - f. Coordination of testing
 - g. Coordination of Owner orientation
 - h. Assembly and delivery of project documentation
 - i. Accurate and timely delivery of administrative documentation
 - 1) Project schedules
 - 2) Project status reports
 - 3) Pay applications
 - 4) Other as requested
 - 4. Receipt and storage of all equipment on behalf of the Owner
 - 5. Transportation of all equipment to designated locations
 - 6. Provision of complete and fully functional lighting system
 - 7. Provision of complete trash removal and recycling services
 - 8. Provision of complete project documentation
 - 9. Provision of product orientation services

1.3 RELATED DOCUMENTS

- A. Project drawings

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Refer to project drawings. Submit applicable product information sheets for all products. On information sheets that include multiple model numbers, circle, or otherwise highlight, the applicable model number, color, or other defining characteristic for the product being supplied.
- B. Shop Drawings: Detail equipment and component assemblies and indicate dimensions, weights, method of field assembly, and location and size of each field connection.
 - 1. Wiring Diagrams: For power, signal, and control wiring.
 - 2. Equipment legend for lighting instruments, panels, dimmers, circuits, and equipment.

1.5 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

- A. Submittal format
 - 1. Two (2) USB media for:
 - a. Owner
 - b. Technology Designer
- B. Maintenance data.
- C. Inventory data (Excel spreadsheet).
 - 1. By Building and Room:
 - a. Each product
 - 1) Manufacturer
 - 2) Product name
 - 3) Model number
 - 4) Serial number
 - 5) MAC address (if applicable)
 - 6) IP address (if applicable)
 - 7) Network Name (if applicable)
 - 8) Owner asset tag number (if applicable)
- D. Software and Firmware Operational Documentation
 - 1. Software operating and upgrade manuals.
 - 2. Program software backup: On USB media. Include non-compiled source code, any program module custom to the project, and all login credentials required to open/access code and modules.

3. Provide printout of software application and graphic screens.

E. Source code and/or equipment configuration files

F. As-Built diagrams/drawings

G. Provide two (2) copies of all Closeout Submittals (one to Owner and one to Technology Designer)

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: The lighting manufacturer will have manufactured electronic lighting and controls for a minimum of ten years. The lighting system will be the product of this one manufacturer.

B. Installer Qualifications: An experienced installer who is an authorized representative of the stage lighting manufacturer for both installation and maintenance of units is required for this project.

C. Source Limitations: Lighting system components and accessories will be supplied to the Owner through an approved lighting vendor. All supplied products must be new and carry full manufacturer warranty support.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

E. Comply with NECA 1.

F. Comply with NFPA 70.

1.8 STANDARDS COMPLIANCE

A. Comply with the latest edition, revision, or current guideline of each standard code (or best practice) as published by the following entities:

1. American Institute of Architects
2. American National Standard Institute (ANSI)
3. American Society for Testing and Materials (ASTM)
4. Audiovisual and Integrated Experience Association (AVIXA)
5. Building Industry Consulting Service International (BICSI)
6. Electronics Industries Alliance (EIA)
7. Entertainment Services and Technology Association (ESTA)
8. Federal Communications Commission (FCC)
9. Federal Information Processing Standards (FIPS)
10. HDBaseT Alliance (HDBaseT)
11. Illumination Engineering Society, North America (IESNA)
12. Institute of Electrical and Electronics Engineers (IEEE)
13. National Electrical Manufacturers Association (NEMA)
14. National Fire Protection Association (NFPA)
15. National Electrical Code (NEC)
16. National Electrical Manufacturers Association (NEMA)
17. National Institute of Standards and Technology (NIST)
18. National Systems Contractors Association (NSCA)
19. Occupational Safety and Health Administration (OSHA)

20. Product Manufacturers within this Specification
21. State and Local Municipality Code and Ordinances
22. Telecommunications Industries Association (TIA)
23. United States Institute for Theater Technology (USITT)
24. Underwriters' Laboratories (UL)

1.9 APPROVED VENDORS

- A. John S. Hyatt & Associates, Inc., Grand Rapids, MI – 616.451.9245
- B. TPC Technologies, Niles, MI – 269.687.9798
- C. Advanced Lighting & Sound, Troy, MI – 248.817.2092
- D. Vincent Lighting Systems, Solon, OH – 800.922.5.356
- E. Fantasee Lighting, Belleville, MI – 734.699.7200

1.10 FIRMWARE

- A. Provide products with latest firmware version available at the time of contract and install the latest firmware revision to all products just prior to commissioning and closeout.
- B. Provide and perform critical firmware updates on supplied products throughout the project warranty period. Critical updates are defined as any firmware update to correct any issue that causes the product to not function as intended, resulting in a non-functional system. Non-critical firmware updates shall be postponed until just prior to commissioning and closeout.
- C. All firmware updates will be performed by the Installing Contractor, without charge to the Owner, throughout the project warranty period.

PART 2 - PRODUCTS

2.1 EQUIPMENT

- A. Certain equipment, detailed in the project drawings, is specified by manufacturer and model number. Include this equipment in base bid proposals.
- B. Supply all needed parts for complete and functional systems, regardless of whether all parts are indicated on project drawings.
- C. Supply the latest version of products available at the time of Contract and in manufacturer's standard finish, unless otherwise indicated.
- D. Include a power cable, safety cable, and yoke, and lighting c-clamp with all stage lighting fixtures.

2.2 ALTERNATE EQUIPMENT

- A. Voluntary alternates will be considered but are to be submitted as a separate proposal (i.e. not as part of base bid submittal). Alternate solutions will not be pre-evaluated or pre-approved.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with manufacturer's written instructions and Division 26 Section "Common Work Results for Electrical."
 - 1. Set permanently mounted items level, plumb, and square with ceilings and walls.
 - 2. Indicated mounting heights are to bottom of unit for suspended items and to center of unit for wall-mounted items.
- B. Mount and connect fixtures, and install and connect plugging boxes and connector strips.
 - 1. If arrangement is not indicated, install so each fixture, dimmer, house lighting circuit, control channel, and outlet circuit can be operated and the complete system demonstrated in all operating modes.

3.2 IDENTIFICATION

- A. Identify components and power and control wiring according to Division 26 Section "Identification for Electrical Systems."
- B. Label each fixture, lighting outlet, and dimmer module with unique designation. Make designations on elevated components readable from floor.

3.3 WIRING

- A. Install wiring as specified in Division 26 Section "Low Voltage Electrical Power Conductors and Cables" for hard-wired connections. Install wiring in raceway except cable and plug connections.
- B. Install power wiring with a separate neutral for each output circuit from main dimmer and for each house and stage lighting circuit.
- C. Wiring in Enclosures: Bundle, train, and support.
- D. Ground equipment.
 - 1. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.4 FIELD QUALITY CONTROL

- A. **Manufacturer's Field Service:** Engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including electrical connections, and to test, adjust, and program lighting control system.
- B. **Reports:** Prepare a schedule of lighting outlets by number; indicate circuits, dimmers, connected fixtures, and control channel assignments. Prepare a schedule of control settings and circuit assignments for house control channels. Prepare written reports of tests and observations. Report defective materials and workmanship and unsatisfactory test results. Include records of repairs and adjustments made.
- C. **Test Labeling:** After satisfactory completion of tests and inspections, apply a label to tested components indicating test results, date, and responsible organization and person.
- D. **Schedule visual and mechanical inspections and electrical tests with at least seven days' advance notice.**
- E. **Visual and Mechanical Inspections and Tests:** As follows:
 - 1. Inspect each fixture, outlet, module, control, and item of equipment for defects, finish failure, corrosion and physical damage, nationally recognized testing laboratory labeling, and nameplate.
 - 2. Exercise and perform operational tests on mechanical parts and operable devices according to manufacturer's written instructions.
 - 3. Check tightness of electrical connections with torque wrench calibrated within previous six months.
 - 4. Verify proper protective device settings, fuse types, and ratings.
 - 5. Record results of inspections and tests.
- F. **Electrical Tests:** Perform tests according to manufacturer's written instructions. Exercise caution when testing devices containing solid-state components. Include the following:
 - 1. Continuity tests of circuits.
 - 2. **Operational Tests:** Connect each outlet to a fixture and a dimmer output circuit so each dimmer module, dimmer control and output circuit, outlet, and fixture in a typical operating mode will be sequentially tested. Set and operate controls to demonstrate fixtures, outlets, dimmers, and controls in a sequence that cues and reproduces actual operating functions for a typical system of the size and scope installed. Include operation and control of houselights and control of stage lights from each control location and station, including optional plug-in control console outlet locations. Record fixture and outlet assignments, control settings, operations, cues, and observations of performance.
- G. **Correct deficiencies disclosed by inspections and tests, and retest deficient items. Verify that specified requirements are met.**

3.5 CLEANING AND ADJUSTING

- A. **Occupancy Adjustments:** Conduct three on-site visits to help make program changes and system and equipment adjustments within one year of Substantial Completion.
- B. **Repair scratches and mars of finish to match original finish. Clean fixtures, devices, and equipment internally and externally using methods and materials recommended by manufacturers.**

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain lighting equipment as specified below:
 - 1. Train Owner's maintenance personnel on procedures and schedules for troubleshooting, servicing, and maintaining equipment.
 - 2. Review data in maintenance manuals. Refer to Division 01 Section "Contract Closeout."
 - 3. Review data in maintenance manuals. Refer to Division 01 Section "Operation and Maintenance Data."
 - 4. Schedule training with Owner, through Architect, with at least seven days' advance notice.

- B. Training: Provide instructions covering features, capabilities, operation, maintenance, and troubleshooting of installed light fixtures and lighting control system. Illustrate actual equipment and related functions. Show cause-and-effect sequences during operation. Cross-reference instruction manuals throughout. Follow same order of presentation as instruction manual.

END OF SECTION 26 5561

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SECTION 27 4116 – INTEGRATED AUDIO VIDEO SYSTEMS AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY OF WORK

- A. Work includes the following, as described in this Specification document, associated project drawings and any subsequent addenda:
1. Existing technology demolition work
 2. Provision of professional systems engineering and programming services.
 3. Provision of accurate and timely project management, including, but not limited to:
 - a. Implementation scheduling
 - b. Coordination with Owner, Construction Manager, Technology Consultant and other trades
 - c. Problem identification and resolution
 - d. Installation coordination at site(s)
 - e. Configuration and programming coordination
 - f. Coordination of testing
 - g. Coordination of Owner orientation
 - h. Assembly and delivery of project documentation
 - i. Accurate and timely delivery of administrative documentation
 - 1) Project schedules
 - 2) Project status reports
 - 3) Pay applications
 - 4) Other as requested
 4. Receipt and storage of all equipment on behalf of the Owner.
 5. Transportation of all equipment to designated locations.
 6. Provision of complete and fully functional audio system.
 7. Provision of complete trash removal and recycling services.
 8. Provision of complete project documentation.
 9. Provision of product orientation services.

1.2 RELATED DOCUMENTS

- A. Project drawings

1.3 ACTION SUBMITTALS

- A. Product Data: Submit applicable product information sheets for all products. Information sheets that include details for multiple model numbers, Contractor shall circle, or otherwise highlight, the applicable model number, color, other defining characteristic for the product being supplied.
1. Video display equipment (electronics, mounts and screens)
 2. Enclosures/furniture (racks, enclosures, podiums)
 3. Control system equipment(processors/user interfaces)
 4. Audio system (amplifiers, mixers, speakers, microphones, antennas)
 5. AV signal routing equipment (switchers, distribution amplifiers, transmitters, receivers)

6. I/O connection interface equipment (wall plate and floor box hardware)
7. Ethernet equipment (AV related)
8. Video conference equipment (codec, camera, interfacing)
9. Source equipment (AV sources)
10. All cabling & termination hardware

- B. Shop Drawings: Submit assembly and installation layout drawings showing product components in assembly with adjacent materials and products (speakers, panels, microphones, electronics rack, enclosure, etc).
- C. Operation and Maintenance Data.
 1. Not applicable
- D. Warranty: Submit manufacturer's standard warranty statement. Submit Contractor statement of project warranty.

1.4 APPROVED PRODUCTS

- A. Certain products, detailed in the project drawings, are specified by manufacturer and model number. These products shall be included in base bid proposals. Voluntary alternates shall be considered but are to be submitted as a separate proposal (i.e. -not as part of base bid submittal). Alternate solutions will not be pre-evaluated or pre-approved.
- B. Audio Video system-type designation symbols are defined on technology floorplans and detail sheets of the project drawings. Audio Video systems are designated as system types. System types are designated as AV(#). Each AV System Type has a detailed riser diagram, included in the project drawings of this bid package, which indicates required major hardware and cabling for the system. Refer to project drawings.

1.5 AUDIO VIDEO SYSTEM DEFINITION & DETAIL

- A. Project drawings include detail to indicate intended device locations and intended signal flow/functionality.
- B. Contractor is responsible for including any/all devices, cables, adapters and accessories to provide complete and functional systems. Project drawings include riser diagrams, notes and details to indicate the intended signal flow and overall functionality. The Contractor shall supply all needed parts for functional systems, regardless of whether all parts are indicated on project drawings.

1.6 OVERALL PROJECT OVERVIEW

- A. This project consists of demolition of the existing audio and lighting systems and the installation of new audio and lighting systems in the auditorium. Detailed demolition and new technology floorplans are provided as part of the project drawings. Unless otherwise noted, the Contractor shall provide all technology hardware. Certain system types have various "Owner Furnished Equipment". This equipment shall be provided by the Owner, to the Contractor. Contractor shall install this equipment.

1.7 QUALITY ASSURANCE:

- A. Manufacturer Qualifications: Minimum 5 years' experience in manufacture of similar products in use in similar environments, including project size, and complexity, and with the production capacity to meet the construction and installation schedule.
- B. Installer Qualifications: Installation, disassembly, re-assembly and calibration shall be done by manufacturer-trained and certified installation technicians. Assigned site Project Manager (Site Foreman) shall have a minimum of 5 years' experience managing/supervising projects of similar size and complexity.
- C. MATERIALS
 - 1. Source Limitations: Obtain components and accessories direct from manufacturer or manufacturer-authorized distributor. Sourced product shall carry full manufacturer warranty support.
 - 2. All supplied products must be new. Remanufactured or refurbished product shall not be utilized.
 - 3. Electrical Components: Listed and labeled per NFPA 70, Article 100 by a testing agency acceptable to authorities having jurisdiction.
- D. STANDARDS COMPLIANCE
 - 1. Comply with the latest edition, revision or current guideline of each standard code (or best practice) as published by the following entities:
 - a. American Institute of Architects (AIA)
 - b. American National Standard Institute (ANSI)
 - c. American Society for Testing and Materials (ASTM)
 - d. Audiovisual and Integrated Experience Association (AVIXA)
 - e. Building Industry Consulting Service International (BICSI)
 - f. Electronics Industries Alliance (EIA)
 - g. Federal Communications Commission (FCC)
 - h. Federal Information Processing Standards (FIPS)
 - i. HDBaseT Alliance (HDBaseT)
 - j. Institute of Electrical and Electronics Engineers (IEEE)
 - k. National Electrical Manufacturers Association (NEMA)
 - l. National Fire Protection Association (NFPA)
 - m. National Electrical Code (NEC)
 - n. National Electrical Manufacturers Association (NEMA)
 - o. National Institute of Standards and Technology (NIST)
 - p. National Systems Contractors Association (NSCA)
 - q. Occupational Safety and Health Administration (OSHA)
 - r. Product Manufacturers within this Specification
 - s. State and Local Municipality Code and Ordinances
 - t. Telecommunications Industries Association (TIA)
 - u. Underwriters' Laboratories (UL)
- E. CURRENT VERSIONS
 - 1. All products supplied shall be of the latest revision available at the time of Contract.
- F. FIRMWARE

1. All products supplied shall have the latest firmware revision available at the time of Contract and be updated to the latest firmware revision just prior to commissioning and closeout.
2. Contractor shall provide and perform critical firmware updates on supplied products throughout the project warranty period. Critical updates are defined as any firmware update to correct any issue that causes the product to not function as intended resulting in a non-functional system. Non-critical firmware updates shall be postponed until just prior to commissioning and closeout.
3. All firmware updates shall be performed by Contractor, without charge to Owner, throughout project warranty period.

G. SOURCE CODE AND CUSTOM PROGRAMMING

1. For systems utilizing control system source code and or custom program/configuration files, Contractor shall supply, and transfer ownership of, all programs/files to the Owner as part of project Close-out Documentation. These files shall include, but not be limited to: uncompiled and compiled source code, customized modules, login credential documentation, etc. Any/all files and information, required to alter, update or change programming, shall be supplied to the Owner.

1.8 DELIVERY, STORAGE AND HANDLING

A. Pack and ship in accordance with manufacturer's recommendations:

1. Finish, assemble, and test all components in the factory before shipment.
2. Rack components will be sub assembled before delivery to jobsite.
3. Deliver components to room designated for installation.

B. Do not accept damaged products at the site. Do not install damaged products.

C. Store products in heated indoor storage near point of installation. Retain protective packaging until installing. Ship to jobsite only after roughing-in, painting work, and other related finish work has been completed and installation areas are ready to accept units and recommended temperature and humidity levels will be maintained during the remainder of construction

1.9 PROJECT CONDITIONS

A. Environmental Requirements: Do not install system until all mortar, wet and dust producing trades have completed their work and finished floor is in place.

B. Confirm all installation locations prior to start of work.

C. Where code permits, wiring may be run outside of conduit. Such wiring shall be coordinated either in a plenum space or by means of secondary enclosure that meets code requirements.

D. Field Measurements: Obtain required field measurements and indicating performance setups, ceiling construction, wall construction, ventilation features, electrical systems, networks and potential obstacles on shop drawings.

1.10 WARRANTY

- A. Manufacturer's written warranty indicating manufacturer's intent to repair or replace components of system that fail in materials or workmanship from date of Substantial Completion for the number of years indicated below.
 - 1. Parts and labor project warranty shall be one (1) year, effective at date of project completion as determined by Owner sign-off of final pay application. Project warranty shall include all costs to troubleshoot and repair any/all reported problems reported during the project warranty period.

1.11 INSTALLATION

- A. Contractor shall install, calibrate and tune system for preset environments determined by customer.
- B. Calibrate systems for proper operation.
- C. Refer to project drawings.

1.12 DEMONSTRATION

- A. Train Owner's personnel to operate and maintain systems.
- B. Include time to train owner's representative.
- C. Turn over operation and instructions to Owner.

1.13 CLOSEOUT SUBMITTALS

- A. Submittal format
 - 1. (2) USB media for:
 - a. Owner
 - b. Technology Designer
- B. Maintenance data.
- C. Inventory data (Excel spreadsheet).
 - 1. By Building and Room:
 - a. Each product:
 - 1) Manufacturer
 - 2) Product name
 - 3) Model number
 - 4) Serial number
 - 5) MAC address (if applicable)
 - 6) IP address (if applicable)
 - 7) Network Name (if applicable)
 - 8) Owner asset tag number (if applicable)

- D. Software and Firmware Operational Documentation:
 - 1. Software operating and upgrade manuals.
 - 2. Program Software Backup: On USB media. Include non-compiled source code, any program module custom to the project, and all login credentials required to open/access code and modules.
 - 3. Provide printout of software application and graphic screens.
 - E. Source Code and/or equipment configuration files
 - F. As-Built diagrams/drawings
 - G. Provide (2) copies of all Closeout Submittals (one to Owner and one to Technology Designer)
- 1.14 FIRESTOPPING
- A. Comply with TIA-569-D, Annex A, "Firestopping."
 - B. Comply with "Firestopping Systems" Article in BICSI's "Telecommunications Distribution Methods Manual."
- 1.15 GROUNDING
- A. Install grounding according to the "Grounding, Bonding, and Electrical Protection" chapter in BICSI's "Telecommunications Distribution Methods Manual."
 - B. Comply with TIA-607-C and NECA/BICSI-607.
 - C. Locate grounding bus bar to minimize the length of bonding conductors. Fasten to wall, allowing at least a 2-inch clearance behind the grounding bus bar. Connect grounding bus bar to suitable electrical building ground, using a minimum No. 4 AWG grounding electrode conductor.
 - D. Bond metallic equipment to the grounding bus bar, using not smaller than a No. 6 AWG equipment grounding conductor.
- 1.16 IDENTIFICATION
- A. Identify system components, wiring, and cabling complying with TIA-606-B. Comply with requirements for identification specified in Section 27 0553 "Identification for Communications Systems."
 - B. Cable and Wire Identification:
 - 1. Label each cable within 4 inches of each termination and tap, where it is accessible in a cabinet or junction or outlet box, and elsewhere as indicated.
 - 2. Each wire connected to building-mounted devices is not required to be numbered at the device if wire color is consistent with associated wire connected and numbered within panel or cabinet.
 - 3. Exposed Cables and Cables in Cable Trays and Wire Troughs: Label each cable at intervals not exceeding 15 feet.
 - 4. Label each terminal strip, and screw terminal in each cabinet, rack, or panel.

- a. Individually number wiring conductors connected to terminal strips, and identify each cable or wiring group, extended from a panel or cabinet to a building-mounted device, with the name and number of a particular device.
 - b. Label each unit and field within distribution racks and frames.
5. Identification within Connector Fields in Equipment Rooms and Wiring Closets: Label each connector and each discrete unit of cable-terminating and -connecting hardware. Where similar jacks and plugs are used for both voice and data communication cabling, use a different color for jacks and plugs of each service.
- C. Labels shall be preprinted or computer-printed type, with a printing area and font color that contrast with cable jacket color but still comply with TIA-606-B requirements for the following:
1. Cables use flexible vinyl or polyester that flexes as cables are bent.

1.17 FIELD QUALITY CONTROL

- A. Tests and Inspections:
1. Visually inspect jacket materials for NRTL certification markings. Inspect cabling terminations in communications equipment rooms for compliance with color-coding for pin assignments, and inspect cabling connections for compliance with TIA-568.1-D.
 2. Visually inspect cable placement, cable termination, grounding and bonding, equipment and patch cords, and labeling of all components.
 3. Test twisted pair cabling for DC loop resistance, shorts, opens, intermittent faults, and polarity between conductors. Test operation of shorting bars in connection blocks. Test cables after termination but not cross-connection.
 4. All CAT6 cables shall be certified in accordance with specification 27 1700 TESTING, IDENTIFICATION AND ADMINISTRATION OF BALANCED TWISTED PAIR INFRASTRUCTURE.
- B. Data for each measurement shall be documented. Data for submittals shall be printed in a summary report that is formatted similarly to Table 10.1 in BICSI's "Telecommunications Distribution Methods Manual," or shall be transferred from the instrument to the computer, saved as text files, printed, and submitted.
- C. Remove and replace cabling where test results indicate that they do not comply with specified requirements.
- D. End-to-end cabling will be considered defective if it does not pass tests and inspections.
- E. Prepare test and inspection reports.

END OF SECTION 27 4116

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