



PROJECT MANUAL

Bid/Permit Set Documents



Grant Boyhood Historical Sites Boyhood Home, Tannery and Schoolhouse

Home: 219 E. Grant Ave., Georgetown, Ohio

Tannery: 300 E. Grant Ave, Georgetown, Ohio

Schoolhouse: 508 S. Water Street, Georgetown, Ohio

Prepared for:

The Ohio History Connection
800 E. 17th Ave., Columbus Ohio 43211

DATE: 07.09.2025

JOB #: 24240.00

Grant Boyhood Historical Sites Boyhood Home, Tannery and Schoolhouse

Prepared for:

**The Ohio History Connection
800 E. 17th Ave., Columbus Ohio
43211**

DOCUMENT 00 01 08
LIST OF CONSULTANTS

SCHOOLEY CALDWELL ASSOCIATES
300 Marconi Blvd, Suite 100,
Columbus, OH 43215

ARCHITECT OF RECORD

KABIL ASSOCIATES
5900 Sharon Woods Blvd., #B
Columbus, OH 43229

STRUCTURAL ENGINEERING

POINT ONE DESIGN
2800 Corporate Exchange Drive #270
Columbus, OH 43231

MEP ENGINEERING

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The Grant Home Sites – Boyhood Home, Schoolhouse, and Tannery
Georgetown, Ohio

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Not Used.

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Refer to specifications on drawings.

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Not Used

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Not Used

END

SECTION 00 11 16 NOTICE TO BIDDERS

Sealed Bids will be received at:

The Ohio History Connection
Historic Sites and Facilities Division
800 E 17th Avenue, Columbus, Ohio 43211

until Thursday, 7/31/2025 at 2:00 PM local time (Owner's clock) and opened immediately thereafter for:

OHC Project No. CP2401
Grant Boyhood Historic Sites
ACGP Restoration
Georgetown, Brown County, Ohio 45121

OHC intends to award the project to one successful Bidder. The Owner intends to award 1 contract to 1 bidder for the project. The Instructions to Bidders, Bid Form, Form of Contract, Drawings, Specifications, and other contract documents may be examined at:

Historic Sites and Facilities
The Ohio History Connection
800 E. 17th Avenue
Columbus, Ohio 43211

Bid Documents will be available electronically on 7/9/2025.

Obtain the electronic versions by registering on the plan holders list and downloading documents from the OHC website at: www.ohiohistory.org/hsfprojects.

Direct all questions and comments to the OHC Project Manager and Architect as follows:

Ms. Sara Vandebark
svandebark@ohiohistory.org

Ms. Kalpa Baghasingh
kbaghasingh@schooleycaldwell.com

Questions must be in writing and sent to both emails above.

A mandatory pre-bid conference will be held on Thursday, 7/17/2025 at 11:00 AM at the following location:

Grant Boyhood Home
219 E Grant Ave
Georgetown, Ohio 45121

The final date questions are due to the Architect is Friday, July 24. 2025 at 12:00 noon.

The anticipated project cost is \$1,000,000.

A Bid Guaranty and Contract Bond are required as defined in the Contract Documents. Prevailing wage rates for Brown County as determined by the State of Ohio, Department of Commerce, Division of Labor and Safety will be applicable to this Work.

No bids may be withdrawn within ninety (90) days after the Bid Opening. The Owner reserves the right to waive irregularities and to reject any or all bids.

END OF SECTION

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SECTION 00 21 13 INSTRUCTIONS TO BIDDERS

OHC Project No. CP2401
Grant Boyhood Historic Sites
ACGP Restoration

PART 1 - GENERAL

1.1 INSTRUCTIONS

- A. To be considered, bids must be made in accordance with these Instructions to Bidders.

1.2 DOCUMENTS

- A. For instructions on obtaining bid documents, see section 00 11 16 Notice to Bidders. Documents are available at no cost by downloading them from the OHC website at: www.ohiohistory.org/hsfprojects.
- B. Direct questions to OHC Project Managers, as noted in section 00 11 16 Notice to Bidders.

1.3 EXAMINATION

- A. Before submitting a bid, Bidder shall carefully examine the documents and the construction sites to obtain firsthand knowledge of the existing conditions. Contractors will not be given extra payment for conditions which can be determined by examining the site and documents.
- B. Bidders may make arrangements to visit the site and inspect existing conditions during business hours Monday through Friday by calling Ms. Nancy Purdy at (937) 378-3087.
- C. A pre-bid conference for all interested parties will be held as provided in the Notice to Bidders.

1.4 PREPARATION OF BIDS

- A. Bids shall be made on an unaltered Bid Form provided in the Bid Documents. Fill in all blank spaces and submit one (1) original. Bids shall be signed with name typed or printed below signature. Where Bidder is a corporation, follow by the name of the state of incorporation and the legal signature of an officer authorized to bind the corporation to a contract.
- B. The Bidder must include prices for all alternates, substitutions, and unit costs on the Bid Form, if any. Failure to comply may be cause for rejection.

1.5 BID GUARANTY AND CONTRACT BOND

- A. Bid Guaranties and Contract Bonds must be satisfactory to the Ohio History Connection.

- B. The BID GUARANTY AND CONTRACT BOND form provided herein by the Ohio History Connection shall be used without change.
- C. If the amount is left blank, the penal sum of the Bid Guaranty and Contract Bond will be the full amount of the principal's base bid plus add alternates; alternatively, if complete, the amount must be not less than the full amount of the base bid plus add alternates, stated in dollars and cents. A percentage is not acceptable.
- D. The Bid Guaranty and Contract Bond must be signed by an Authorized Agent of an acceptable Surety Bonding Company and by the Bidder. A surety company authorized by the Ohio Department of Insurance to transact business in the State of Ohio must issue the bond. It is essential that the bond be issued by a surety company which can adequately demonstrate a record of competent underwriting, efficient management, adequate reserves and soundness of investments as demonstrated by Best's Insurance Reports rating of A- or better.
- E. Bid Guaranties and Contract Bonds must be supported by credentials showing the following:
 - 1. Power of Attorney of the Agent.
 - 2. Corporate Seals must be affixed to all originals and certified copies.
- F. In lieu of the Bid Guaranty referred to in Paragraph 1.05, B. above, the bidder may submit the Bid Guaranty in the form of a Certified Check, Cashier's Check or Letter of Credit. A bid bond is not acceptable for use as a Bid Guaranty.
 - 1. The amount of the Certified Check, Cashier's Check or Letter of Credit shall be equal to ten percent (10%) of the base bid plus add alternates.
 - 2. The Bid Guaranty shall be payable to the Ohio History Connection.
- G. The Bid Guaranty and Contract Bond shall be returned to all unsuccessful bidders immediately after the Contract is executed.
- H. The Certified Check, Cashier's Check or Letter of Credit shall be returned to the successful bidder upon filing of the Contract Bond. The bond shall not be deemed "filed" until the Contract is fully executed.

1.6 SUBMITTAL

- A. Submittals AT Bid:
 - 1. Submit Bid Forms in an opaque, sealed envelope. Identify the envelope with:
 - a) OHC project number
 - b) Project Name
 - c) Bidder's Company Name
 - d) The phrase, "Sealed Bid Enclosed – Attn: Historic Sites and Facilities"
 - 2. Submit bids in accordance with the Notice to Bidders. A faxed Bid will not be accepted.

3. With bid, submit a Responsible Bidder Information Form, per specification section 00 45 13; Bid Guaranty and Contract Bond per specifications; and Minority Hiring Goal Form, Subcontractor/Supplier Utilization Form, and Good faith Effort Summary and Demonstration Form, per specification section 00 45 39.

1.7 OHIO SALES TAX

- A. Material purchased for use or consumption in connection with the proposed work will be exempt from the State of Ohio Sales Tax as provided for in Section 5739.02 in the Revised Code of Ohio, and also from the State of Ohio Use Tax, Section 5741.01.
- B. Purchases by the Contractor of expendable items such as form lumber, tools, oils, greases, fuel, or equipment rentals are subject to the application of the Ohio Sales or Use Tax.

1.8 WAGE RATES

- A. The wages to be paid for a legal days work to laborers, workmen or mechanics engaged in the work under this contract at the site of the project for the trade or occupation employed shall not be less than the wage rates set forth by the Department of Employment Services of the State of Ohio in effect for Brown County, as of the date bids are received for the project. Reference wage rates as listed herein.

1.9 DOCUMENTS REQUIRED PRIOR TO SIGNING CONTRACT

- A. Immediately upon the award of, and prior to the signing of the contract, the successful bidder shall furnish to the Architect:
 1. A Schedule of Values (AIA Document G703, Continuation Sheet) for various categories of work showing itemized labor and material amounts for the total contract price. The Schedule of Values must clearly indicate separate costs for each building project. Further, each separate cost must indicate proper allocation for materials and labor for each line item.
 2. Certificates of Insurance from company insuring the work.
 3. Worker's Compensation Certificate.
 4. To support the Bid Guaranty and Contract Bond, the successful bidder shall also furnish the following:
 - a. Credentials showing the Power of Attorney.
 - b. A Certificate of Compliance issued by the Division of Insurance showing the Bonding Company is licensed to do business in the State of Ohio.
 - c. Financial statement of Bonding Company.
 5. List of all Sub-contractors
 - a. Sub-Contractors are expected to meet the same performance standards as the General Contractor. At their discretion, the Architect may request a Responsible Bidder Form from any sub-contractor.
 6. Construction Schedule

- B. If the successful bidder is a foreign corporation, i.e. not incorporated under the laws of the State of Ohio, the Bidder shall also furnish:
 - 1. A certificate from the Secretary of State showing the right of the successful bidder to do business in the State of Ohio.
 - 2. If the successful bidder is a domestic or foreign corporation, the person signing as agent such contract for the corporation shall, upon the Owner's request, file legal evidence of the agent's authority to bind the corporation.

1.10 AWARD OF CONTRACT

- A. The Owner reserves the right to accept any bid, to reject any and all bids, and to negotiate contract terms with the various bidders.

1.11 TIME OF COMPLETION

- A. Complete all work in the time period established in the Supplementary Conditions.

1.12 STATE OF OHIO RESPONSIBILITY

- A. Each party hereto recognizes and agrees that the Ohio Facilities Construction Commission, the Ohio Building Authority, the Ohio Department of Administrative Services and the State of Ohio are not bound by or liable under this contract or license, as applicable, and are not responsible for the acts or omissions of the Ohio History Connection.

1.13 FACILITY CLASSIFICATION REGARDING LEAD-BASED PAINT

- A. This building is not classified as a "child occupied" facility use, as defined by the U.S. Environmental Protection Agency (EPA) Renovation, Repair and Painting (RRP) program (ref.: 40 CFR 745.82); therefore the requirement of the EPA Residential Property Renovation program regulation 40 CFR 745.80, Subpart E as well as Ohio lead abatement regulations which require lead-safe work practices and worker certification, are not applicable to this project. The contractor shall however, minimize dust and debris caused by work activity, contain it to the smallest practical areas, and to promptly and thoroughly clean the areas to eliminate dust and debris.

PART 2 – NOT USED

PART 3 – NOT USED

END OF SECTION

SECTION 00 26 00 SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for substitutions submitted with a Bidder's Bid.

1.2 DEFINITIONS

- A. Definitions in this Section do not change or modify the meaning of other terms used in the Contract Documents.
- B. Substitutions: change in product, material, equipment, or method of construction required by the Contract Documents or any portion thereof, proposed by a Bidder and submitted with its bid.
 - 1. Substitutions requested and accepted during the bidding period, are included in the Contract Documents and are not subject to requirements in this Section for substitutions.
 - 2. Revisions to the Contract Documents requested by the Owner or Architect.
 - 3. Specified options of products and construction methods included in the Contract Documents.
 - 4. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.3 SUBMITTALS

- A. Substitution Request Submittal:
 - 1. Submit with the bid 3 copies of each request for substitution for consideration. Submit requests in a form acceptable to the Architect. Include, as a minimum, the following information:
 - a. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate contractors that will be necessary to accommodate the proposed substitution.
 - b. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements, such as performance, weight, size, durability, and visual effect.

- c. Product data, including drawings and descriptions of products and fabrication and installation procedures.
 - d. Samples, where applicable or requested.
 - e. A statement indicating the effect on the Contractor's Construction Schedule of the using of the proposed substitution, compared to the schedule without approval of the substitution. Also, indicate the effect of the proposed substitution on the overall Contract Time.
 - f. Cost information, including a proposal of the net change, if any, in the Contract Sum.
 - g. The Contractor's certification that the proposed substitution conforms to requirements in the Contract Documents in every respect and is appropriate for the applications indicated.
 - h. The Contractor's waiver of rights to additional payment or time that may subsequently become necessary to perform adequately.
2. The Architect may request additional information or documentation for evaluation. The Architect will notify the Contractor of acceptance or rejection of the proposed substitution within 2 weeks of receipt of the request or one week of receipt of additional information or documentation, whichever is later.

PART 2 – PRODUCTS

2.1 SUBSTITUTIONS

- A. The Architect will accept a request for substitution when one or more of the following conditions are satisfied, as determined by the Architect. If one or more of the following conditions are not satisfied, the Architect will return the request without action except to record noncompliance with these requirements.
- 1. Extensive revisions to the Contract Documents are not required.
 - 2. Proposed changes are in keeping with the general intent of the Contract Documents.
 - 3. The request is timely, fully documented, and properly submitted.
 - 4. The specified product or method of construction cannot be provided within the Contract Time. The Architect will not consider the request if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
 - 5. The request meets the requirement of an "or-equal" clause or similar language in the Contract Documents.

6. The requested substitution offers the Owner a substantial advantage, in cost, time, energy conservation, or other considerations, after deducting additional responsibilities the Owner must assume. The Owner's additional responsibilities may include compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner, and similar considerations.
 7. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
 8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials and where the Contractor certifies the proposed substitution will overcome the incompatibility.
 9. The specified product or method of construction cannot be coordinated with other materials and where the Contractor certifies that the proposed substitution can be coordinated.
 10. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provides the required warranty.
- B. The Contractor shall bear all costs for work not identified or reasonably implied in its proposal to the Owner, including and not limited to modification to the project site, new and existing construction, and construction components.

PART 3 – NOT USED

END OF SECTION

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SECTION 00 41 13 FORM OF PROPOSAL – STIPULATED SUM

OHC Project No. 2401
Grant Boyhood Historic Sites
ACGP Restoration

TO: The Ohio History Connection
Director of Historic Sites and Facilities
800 E 17th Avenue
Columbus, Ohio 43211

PART 1 - GENERAL

By submitting this Bid, Bidder acknowledges its receipt of all Addenda, which it has listed below and that the absence of the Bidder's acknowledgement of receiving all Addenda may be cause, in the Owner's sole discretion, for the Owner not to accept the Bid.

Bidder: list below each Addenda and its respective issue date in the spaces provided.
Attach additional sheets if necessary.

Addendum # _____ Date _____

Addendum # _____ Date _____

Addendum # _____ Date _____

The undersigned Bidder hereby agrees to accept the award of the Contract if offered, and to timely commence and perform the Work, provided the award occurs within a reasonable time after the Bid Opening.

BIDDER: COMPANY NAME _____

ADDRESS _____

TELEPHONE NUMBER WITH AREA CODE _____

FEDERAL TAX ID NUMBER _____

NAME OF OFFICER or OWNER _____
(Type or Print)

SIGNATURE _____

OFFICE _____

DATE _____

PART 2 – PROPOSAL

2.1 BOYHOOD HOME BASE BID: Kitchen Restoration

Bid _____ Dollars
(Bidder: type or clearly print total proposal in words)
(\$ _____)

2.2 BOYHOOD HOME ALTERNATE ONE: Raise Grant Stone

Bid _____ Dollars
(Bidder: type or clearly print total proposal in words)
(\$ _____)

2.3 BOYHOOD HOME ALTERNATE TWO: Kiosk Foundations

Bid _____ Dollars
(Bidder: type or clearly print total proposal in words)
(\$ _____)

2.4 SCHOOLHOUSE BASE BID: Wall Reconstruction

Bid _____ Dollars
(Bidder: type or clearly print total proposal in words)
(\$ _____)

2.5 SCHOOLHOUSE ALTERNATE ONE: Paint Exterior

Bid _____ Dollars
(Bidder: type or clearly print total proposal in words)
(\$ _____)

2.6 SCHOOLHOUSE ALTERNATE TWO: Kiosk Foundations

Bid _____ Dollars
(Bidder: type or clearly print total proposal in words)
(\$ _____)

2.6 GRANT TANNERY BASE BID: Barn Roof Cleaning and Treatment

Bid _____ Dollars
(Bidder: type or clearly print total proposal in words)
(\$ _____)

2.6 GRANT TANNERY ALTERNATE ONE: Kiosk Foundations

Bid _____ Dollars
(Bidder: type or clearly print total proposal in words)
(\$ _____)

2.6 **GRANT TANNERY ALTERNATE TWO:** Addition Interior Finishing

Bid _____ Dollars
(Bidder: type or clearly print total proposal in words)
(\$_____)

2.6 **GRANT TANNERY ALTERNATE THREE:** Demo Modern Interior Additions

Bid _____ Dollars
(Bidder: type or clearly print total proposal in words)
(\$_____)

2.9 PERIOD OF PERFORMANCE / LIQUIDATED DAMAGES

- A. The Period of Performance and Liquidated Damage rates are indicated in the Supplementary Conditions.
- B. Bidder may propose a different Period of Performance as a Substitution below.

2.10 SUBSTITUTIONS

- A. Bidder may propose up to three substitutions below. Provide additional sheets as necessary to accurately describe the substitution. If accepted by the Owner, a substitution shall be incorporated in the Bid and Contract and shall be bound by all Contract provisions.

Proposed Substitute		Add	Deduct
1.			
2.			
3.			

2.10 SUCCESSFUL BIDDER ASSISTANCE AND COOPERATION

- A. The accepted Bidder shall assist and cooperate with the Owner in preparing the Agreement, and within seven (7) days following presentation of the Agreement to the successful Bidder, the successful Bidder shall execute three (3) originals and return them to the Owner.

END OF SECTION

**BID GUARANTY
AND
CONTRACT BOND**

The Bid Guaranty and Bid Bond form for use on this project is provided on the double-sided sheet that follows this page.

A PDF version is attached.

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Bid Guaranty and Contract Bond

OHIO HISTORY CONNECTION • Historic Sites and Facilities Division • 800 E. 17th Ave. • Columbus, Ohio 43211-2497

Section 153.571 Ohio Revised Code

KNOW ALL PERSONS BY THESE PRESENTS, that we, the undersigned

_____ as Principal

and

_____ as Surety

are hereby held and firmly bound unto the Ohio History Connection as Obligee in the penal sum of the dollar amount of the bid submitted by the Principal to the Obligee on:

_____ to undertake the project known as:
Type or print date of bid submittal

_____ OHC Project number

_____ OHC Project Name

The penal sum referred to herein shall be the dollar amount of the Principal's bid to the Obligee, incorporating any additive and deductive alternate proposals made by the Principal on the date referred to above to the Obligee, which are accepted by the Obligee. In no case shall the penal sum exceed the amount of

_____ \$ _____
Type or print amount first in words, then numbers

(When the line above is left blank, the penal sum will be the full amount of the Principal's Bid including alternates. When the line above indicates an amount, the amount stated must not be less than the full amount of the Bid including alternates in dollars and cents; a percentage is not acceptable.)

for the payment of the penal sum well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH that whereas the above named Principal has submitted a bid on the above-referred project,

NOW, THEREFORE, if the Obligee accepts the bid of the Principal and the Principal fails to enter into a proper contract in accordance with the bid, plans, details, specifications, and bills of material; and in the event the Principal pays to the Obligee the difference not to exceed ten percent of the penalty hereof between the amount specified in the bid and such larger amount for which the Obligee may in good faith contract with the next lowest bidder to perform the work covered by the bid; or in the event the Obligee does not award the contract to the next lowest bidder and resubmits the project for bidding, the Principal will pay the Obligee the difference not to exceed ten percent of the penalty hereof between the amount specified in the bid, or the costs, in advertising and printing and mailing notices to prospective bidders, whichever is less, then this obligation shall be null and void, otherwise to remain in full force and effect. If the Obligee accepts the bid of the Principal and the Principal, within ten days after the awarding of the contract, enters into a proper contract in accordance with the bid, plans, details, specifications, and bills of material, which said contract is made a part of this bond the same as though set forth herein; an



Bid Guaranty and Contract Bond

continued

OHIO HISTORY CONNECTION • Historic Sites and Facilities Division • 800 E. 17th Ave. • Columbus, Ohio 43211-2497

OHC Project: _____ OHC Project Name: _____

NOW ALSO, if the Principal shall well and faithfully perform each and every condition of such contract; and indemnify the Obligee against all damage suffered by failure to perform such contract according to the provisions thereof and in accordance with the plans, details, specifications, and bills of material therefore; and shall pay all lawful claims of subcontractors, materials suppliers, and laborers, for labor performed and materials furnished in the carrying forward, performing, or completing of said contract; we agreeing and assenting that this undertaking shall be for the benefit of any materials supplier or laborer having a just claim, as well as for the Obligee herein; then this obligation shall be void; otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

THE SURETY HEREBY STIPULATES AND AGREES that no modifications, omissions, or additions, in or to the terms of said contract or in or to the plans and specifications therefore shall in any wise affect the obligations of said Surety on its bond, and it does hereby waive notice of any such modifications, omissions or additions to the terms of the contract or to the work or to the specifications.

BOND NUMBER: _____

SIGNED AND SEALED this _____ day of _____, 20_____

PRINCIPAL

SURETY

Type or type authorized officer or owner name and title

Type or print Agent's name and title

Signature (seal)

Signature (Attorney-in-Fact) (seal)

Surety Company Address and Telephone:

Surety Agent's Address and Telephone:

Street

Street

City, State, Zip

City, State, Zip

Telephone with Area Code

Telephone with Area Cod

NOTE: Failure by any party to sign Bid Guaranty and Contract Bond shall result in rejection of bid.

SECTION 00 43 39 MINORITY HIRING GOAL**PART 1 – ATTENTION ALL BIDDERS**

1.1 RELATED SECTIONS: 00 45 39 ACGP Minority Goal Bidding Form

1.2 IMPORTANCE OF THIS SECTION

- A. The Contractor shall make a good faith effort to employ minority persons in the same percentage as the average percentage of minority persons who reside in the county in which the project is located and any contiguous Ohio counties. Contractor shall submit with it's the attached ACGP Minority Hiring Goal Compliance Plan.

PART 2 – GOALS

2.1 GOALS AND PREFERENCES

- A. Goals have been established for the following categories based on the demographics of Brown County.

Minority Participation Goals				
	Black	American Indian	Asian	Hispanic/Latino
Goals	1.0%	0.3%	0.4%	1.3%

2.2 GOOD FAITH EFFORT

- A. A bidder must, in order to be responsible and responsive, make sufficient good faith efforts to meet the goal and must show all necessary and reasonable steps it undertook to achieve the MBE goal, even if they were not fully successful.
- B. Examples of Good Faith Efforts Include:
1. The Bidder utilized reasonable and available means to solicit all MBEs that have the capability to perform work under the contract.
 2. The Bidder selected portions of the contracted work that would increase the likelihood of participation by MBEs.
 3. The Bidder provided all appropriate MBEs with adequate information about the plans, specifications and requirements of the contract in time for MBE's to provide price quotations for the project.
 4. The Bidder negotiated in good faith with interested MBEs. To demonstrate good faith effort negotiations, the Bidder shall provide evidence of such negotiations, including but not limited to names, addresses, dates, and telephone numbers of the MBE.
 5. The Bidder properly rejected an interested MBE as being unqualified for the work of the contract. Rejection of a MBE based on standing within appropriate industry or membership of affiliation in a business, social, or political group is not a basis for rejection.
 6. The Bidder utilized the services of one or more organizations that provide contractor assistance in the identification and recruitment of MBEs.

7. The Bidder utilized the list of MBE's as provided by the Equal Employment Opportunity Division of the Department of Administrative Services. See Part 4 Resources.

PART 3 – BIDDING AND CONTRACT REQUIREMENTS

3.1 SUMMARY OF REQUIRED BIDDER ACTIONS

- A. Each bid submittal shall include the following documents:
 1. If ACGP minority hiring goal compliance goals will be met:
 - a) Subcontractor Utilization Plan
 2. If ACGP minority hiring goal compliance goals will not be met:
 - a) Summary of good faith efforts made to meet goal
 - b) Subcontractor Utilization Plan
 - c) Documentation of good faith efforts made

3.2 PRE-AWARD REVIEW

- A. Utilization Form listing all participating MBE's.
 1. Bidders shall provide copies of Preferred Business Certification for all tentative project MBE's.
- B. Demonstration of Good Faith Effort Form
 1. All MBE's outreached shall be listed on the Good Faith Effort form. Owner reserves the right to contact all Preferred Business firms in bid documents for verification.

3.3 AWARD

- A. Providing, within (14) calendar days after receiving an approved contract, bidding contracts with all Minority Business firms on the project. Contracts shall include:
 1. Date of contract
 2. Project Name
 3. Scope of Work
 4. Contract total amount
- A. Throughout the duration of the project, the Contractor must submit along with each monthly pay estimate a copy of the Affidavit of Contractor Payment Form for each MBE subcontractor and material supplier receiving payment from the previous month's approved pay request.

3.4 PREFERRED BUSINESS PARTICIPATION FINAL REPORT

- A. The Contractor shall provide a certified Affidavit of Contractor Final Report for payments made to each MBE subcontractor and material supplier that participated on this Contract. This report shall include, but not be limited to, the following items:

1. Name of each MBE business;
 2. Original amount of the MBE business contract or purchase order with the Contractor;
 3. Current amount of the MBE business contract or purchase order;
 4. The amount of the invoice to date;
 5. The amount paid to date; and
 6. A statement describing any substantive product or performance deficiencies.
- B. This report must be submitted along with the Contractor's Final Pay request, in accordance with the Contract. Failure to submit this report may delay final payment and closeout of the Contract.

PART 4 – MINORITY BUSINESS RESOURCES

4.1 DEPARTMENT OF ADMINISTRATIVE SERVICES

- A. To view a list of Preferred Business vendors:
1. Visit the MBE, EDGE, and WBE certification website at <https://eodreporting.oit.ohio.gov/> for the latest list.
 2. Preferred Business resources available: <http://www.das.ohio.gov/Divisions/Equal-Opportunity>

4.2 PREFERRED BUSINESS ASSISTANCE ORGANIZATIONS

- A. Ohio Minority Supplier Development Council
1. The Chase Building; 100 E Broad St Suite 2460, Columbus, Ohio 43215 Phone: (614)225-6959
- B. Ohio Department of Development Minority Business Assistance Centers
3. Central Ohio Minority Business Association, 1393 East Broad Street, Floor 2, Columbus, OH 43205 Phone: (614) 252-8005 Fax: (614) 258-9667

END OF SECTION

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SECTION 00 45 13.A RESPONSIBLE BIDDER INFORMATION FORM – GENERAL CONTRACTOR

OHC Project No. CP2401
 Grant Boyhood Historic Sites
 ACGP Restoration

Attach additional pages as needed.

1. Company Name _____
 Company Address _____
 Street _____
 City _____ State _____ Zip _____
 Company Telephone Number (w/ Area Code) (_____) _____
 Company Fax Number _____
 Company Email _____

2. Indicate the overall experience of the Bidder performing the trades bid including the years in business performing the trade under present and former business names.

3. List three projects that the Bidder has completed that are similar in scope to the current project. Include contact information.

	Project	Scope	Value	Contact
a)				
b)				
c)				

4. List the primary Subcontractors for this project. Indicate the overall experience of the Subcontractors, including the years in business performing the trade under present and former business names.

5. The apparent low Bidder shall submit, upon request of the Division, either:
 - a) An annual financial statement prepared within the twelve (12) months prior to the bid by an independent licensed accounting firm; and the name, address, contact person and phone number of the bank normally used by the Bidder for its primary banking; or,
 - b) A financial report generated within 30 days prior to the Bid from Standard and Poors, Dun and Bradstreet or a similar company acceptable to the State documenting the financial condition of the Bidder; and the name, address, contact person and phone number of the bank normally used by the Bidder for its primary banking;

This information is not a public record under Section 149.43, ORC; and will remain confidential, except under proper order of a court.

6. Indicate the Bidder's relevant facilities and major equipment, whether leased or owned,

7. List all ongoing Projects and Projects completed in the last four (4) years which are similar in cost and type to the Project being bid. Include scope of Work, Contract value and Project name/contact Person/address/phone number for each Owner and Associate for each Project.

Project	Scope	Value	Contact

a)

b)

c)

d)

8. Indicate all occurrences of the following in the last four (4) years (if none, so state). For verification by the State, attach documentation, and/or provide sufficient and appropriate detail information such as: Project name, Owner, contact person and phone number, Contract amount, etc.

a) Prevailing Wage violations or judgments

b) Affirmative Action violations

c) Contract abandonment, Contract termination or Surety takeover

d) Debarment by State, federal or local jurisdictions

e) EPA/OSHA violations

f) Liquidated damages assessed

9. Management. Identify individuals assigned to this project.

Principal _____ Years with firm _____ Total Exp. _____

Project Manager _____ Years with firm _____ Total Exp. _____

Field Superintendent _____ Years with firm _____ Total Exp. _____

CPM Scheduler _____ Years with firm _____ Total Exp. _____

10. Certification. I hereby certify that the information above is factual and complete.

Company Name _____

Authorized Official (please print or type) _____

Signature of Authorized Official _____ Date _____

END OF SECTION

SECTION 00 45 13 B - RESPONSIBLE BIDDER INFORMATION FORM – MASONRY RESTORATION

OHC Project No. CP2401
Grant Boyhood Historic Sites
ACGP Restoration

Attach additional pages as needed.

1. Mason's Name _____

Company Name _____

Company Address _____

Street _____

City _____ State _____ Zip _____

Company Telephone Number (w/ Area Code) (_____) _____

Company Fax Number _____

Company Email _____

2. Indicate the overall experience of the Subcontractor performing the trade, including the years in business performing the trade under present and former business names.

List four historic preservation projects on National Historic Landmark properties that the Bidder has completed that are similar in scope to the current project. Include contact information. See Section 01 43 00 Quality Assurance for specific experience requirements.

IMPORTANT: Attach photos of each project.

Project	Scope/Description (incl. style)	Value
Contact		

a)

b)

c)

d)

3. Indicate the relevant facilities and major equipment, whether leased or owned.

4. Indicate all occurrences of the following in the last four (4) years (if none, so state). For verification by the State, attach documentation, and/or provide sufficient and appropriate detail information such as: Project name, Owner, contact person and phone number, Contract amount, etc.
 - a) Prevailing Wage violations or judgments

 - b) Affirmative Action violations

 - c) Contract abandonment, Contract termination or Surety takeover

d) Debarment by State, federal or local jurisdictions

e) EPA/OSHA violations

f) Liquidated damages assessed

5. Management. Identify individuals assigned to this project.

Owner _____ Years with firm _____ Total Exp. _____

Tradesman _____ Years with firm _____ Total Exp. _____

Tradesman _____ Years with firm _____ Total Exp. _____

6. Certification. I hereby certify that the information above is factual and complete.

Company Name

Authorized Official (please print or type)

Signature of Authorized Official _____ Date _____

END OF SECTION

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SECTION 00 45 39 ACGP MINORITY HIRING GOAL COMPLIANCE FORMProject Name: Grant Boyhood Historic Sites Restoration

The established minority hiring goal:

Contractor shall make a good faith to employ minority persons in the same percentage as the average percentage of minority persons who reside in the county in which the project is located and any contiguous Ohio counties.

Contractor's Name _____

Contact Person: _____ Telephone No. _____

Fax No. _____ E-mail Address: _____

Address: _____

City: _____ State: _____ Zip Code: _____

Total Base Bid Price \$ _____

Minority employment \$ _____ %

Check one:
☐ Will Meet Minority Hiring Goal

☐ Will Not Meet Minority Hiring Goal
THIS PLAN MUST BE SIGNED AND SUBMITTED WITH YOUR BID

I certify that the information included in this ACGP Minority Hiring Goal Compliance Plan is true and complete to the best of my knowledge and belief. I further understand and agree that this ACGP Minority Hiring Goal Compliance Plan shall become part of my Contract for the Project.

 Name and Title of Authorized Representative (Print)

 Signature

 Date

PART 2 – SUBCONTRACTOR/SUPPLIER UTILIZATION COMMITMENT FORM

Contract Amount:	Cert.	Type
Company:	☐ MBE	☐ Subcontractor
Address:	☐ WBE	☐ Manufacturer
City: County:	☐ EDGE	☐ Supplier
Scope of Work:		

Contract Amount:	Cert.	Type
Company:	☐ MBE	☐ Subcontractor
Address:	☐ WBE	☐ Manufacturer
City: County:	☐ EDGE	☐ Supplier
Scope of Work:		

Contract Amount:	Cert.	Type
Company:	☐ MBE	☐ Subcontractor
Address:	☐ WBE	☐ Manufacturer
City: County:	☐ EDGE	☐ Supplier
Scope of Work:		

Contract Amount:	Cert.	Type
Company:	☐ MBE	☐ Subcontractor
Address:	☐ WBE	☐ Manufacturer
City: County:	☐ EDGE	☐ Supplier
Scope of Work:		

Contract Amount:	Cert.	Type
Company:	☐ MBE	☐ Subcontractor
Address:	☐ WBE	☐ Manufacturer
City: County:	☐ EDGE	☐ Supplier
Scope of Work:		

PART 3 – GOOD FAITH EFFORT DEMONSTRATION

- ☐ I have made all efforts to reach all minority subcontractors and material suppliers.
- ☐ I *have* achieved OHC’s listed MBE goals.
- ☐ I *have partially* achieved OHC’s listed MBE goals.
- ☐ I *have not* achieved OHC’s listed MBE goals.

To demonstrate Good Faith Effort, list all MBE firms contacted.

Name and Address	Contact Person and Tel #	Contact Date	Type of Work/Materials	Price Quoted	Reason(s) for Not Accepting

END OF SECTION

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AGREEMENT FORM BETWEEN OWNER AND CONTRACTOR

A draft of AIA Document A105-2017, modified, follows this page.

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DRAFT AIA® Document A105® – 2017

Standard Short Form of Agreement Between Owner and Contractor

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

BETWEEN the Owner:
(Name, legal status, address and other information)

«Ohio History Connection, a 501 (c) 3 corporation»« »
«800 E. 17th Avenue »
«Columbus, Ohio 43211-2474 »

and the Contractor:
(Name, legal status, address and other information)

« »« »
« »
« »
« »
Phone Number:
Tax I.D. #

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

« »
« »
« »

The Architect:
(Name, legal status, address and other information)

« »« »
« »
« »
« »

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

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

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TABLE OF ARTICLES

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ARTICLE 1 THE CONTRACT DOCUMENTS

§ 1.1 The Contractor shall complete the Work described in the Contract Documents for the Project. The Contract Documents consist of:

- .1 this Agreement signed by the Owner and Contractor;
- .2 the drawings and specifications prepared by the Architect, dated «», and enumerated as follows:

Drawings:

Number	Title	Date
« »		

Specifications:

Section	Title	Pages
« »		

- .3 addenda prepared by the Architect as follows:

Number	Date	Pages
« »		

- .4 written orders for changes in the Work, pursuant to Article 10, issued after execution of this Agreement; and

.5 other documents, if any, identified as follows:

«Section 00 73 00 Supplementary Conditions»

ARTICLE 2 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 2.1 The Contract Time is the number of calendar days available to the Contractor to substantially complete the Work.

§ 2.2 Date of Commencement:

The Date of Commencement shall be established in a notice to proceed issued by the Architect, as authorized by the Owner or as provided in the Supplementary Conditions and is the day the Contractor is authorized to begin its activities under this Contract.

§ 2.3 Substantial Completion and Final Completion:

§ 2.3.1 The initial date of Substantial Completion shall be the named date or the last day of the period to achieve Substantial Completion as established in the Supplementary Conditions, unless and until modified as provided in Article 10. The Contractor shall schedule and prosecute the Work regularly and diligently at a rate of progress to achieve a Certificate of Substantial Completion on or before the approved date of Substantial Completion.

« »

§ 2.3.2 The initial date of Final Completion shall be the named date or the last day of the period to achieve Final Completion as established in the Supplementary Conditions, unless and until modified as provided in Article 10. The Contractor shall schedule and prosecute the Work regularly and diligently at a rate of progress to achieve Final Completion on or before the approved date of Final Completion.

« »

ARTICLE 3 CONTRACT SUM

§ 3.1 The Contract Sum shall include all items and services necessary for the proper execution and completion of the Work. Subject to additions and deductions in accordance with Article 10, the Contract Sum is:

« » (\$ « »)

§ 3.2 For purposes of payment, the Contract Sum includes the following values related to portions of the Work:
(Itemize the Contract Sum among the major portions of the Work.)

Portion of the Work	Value
« »	

§ 3.3 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and hereby accepted by the Owner:
(Identify the accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

« »

§ 3.4 Allowances, if any, included in the Contract Sum are as follows:

(Identify each allowance.)

Item	Price
« »	

§ 3.5 Unit prices, if any, are as follows:

(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit (\$0.00)
« »		

ARTICLE 4 PAYMENTS

§ 4.1 Based on Contractor's Applications for Payment certified by the Architect, the Owner shall pay the Contractor, in accordance with Article 12, as follows:

(Insert below timing for payments and provisions for withholding retainage, if any.)

« »

§ 4.2 Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate below, or in the absence thereof, at the legal rate prevailing at the place of the Project.

(Insert rate of interest agreed upon, if any.)

«0.00» % « zero »

§ 4.3 RETAINAGE

§ 4.3.1 When the major portion of the Work is complete or is in use by the Owner (as determined by the Architect and approved by the Owner) the Contractor may request a reduction in the amount retained as determined under § 12.2.1.4.

§ 4.3.2 Upon written consent of the Contractor's surety, and the Contractor's submittal of lien releases from the Contractor's subcontractors and material suppliers for work performed to date and for materials ordered to date, the Owner may at its sole discretion, reduce the amount retained.

§ 4.3.3 Any reduction or release of retained funds shall not be a waiver of the Owner's right to retain funds relative to future payments to the Contractor, or any other right or remedy the Owner has under the Contract Documents at law or in equity.

ARTICLE 5 INSURANCE AND BONDS

§ 5.1 The Contractor shall provide Contractor's general liability and other insurance as follows:

(Insert specific insurance requirements and limits.)

§ 5.2 WORKER'S COMPENSATION

§ 5.2.1 All Contractors shall procure and maintain during the life of the Contract, and provide evidence of Worker's Compensation Insurance as required by the State of Ohio for all employees to be engaged on the project prior to commencing any work on the project.

§ 5.2.2 The Contractor shall require its subcontractors to procure and maintain during the life of the Contract, Worker's Compensation Insurance as required by the State of Ohio for all employees to be engaged on the project and shall require its subcontractors to provide evidence of such coverage to the Contractor before commencing the subcontractor work on the project.

§ 5.3 INSURANCE

§ 5.3.1 The Contractor shall not commence work under this Agreement until the Contractor has obtained all the insurance required hereunder and such insurance has been approved by the Ohio Historical Society (dba Ohio History Connection). The Contractor shall not allow any subcontractor to commence work on a subcontract until all similar insurance required of the subcontractor(s) has been so obtained and approved. Approval of the insurance by the Ohio Historical Society shall not relieve or decrease the liability of the Contractor hereunder.

- .1 The Contractor shall provide acceptable evidence of the required insurance which shall also include the Ohio Historical Society (dba Ohio History Connection) project number and name and the insurance agent company name, address, and telephone number.

§ 5.4 CONTRACTOR'S LIABILITY INSURANCE

§ 5.4.1 The Contractor shall acquire and maintain during the term of the Contract, Bodily Injury and Property Damage Liability Insurance under an acceptable Comprehensive General/Automobile Liability Policy which shall provide and include coverage on all Contractor's Operations, Contractor's Protective (Sublet) Liability, Contractual Liability, Completed Operations Liability, Owned Automobiles and Non-Owned and Hired Automobiles.

.1 The Contractor shall provide and shall require its Subcontractors to provide insurance required by this section that names the Ohio Historical Society (dba Ohio History Connection) as an additional insured.

§ 5.4.2 The Contractor shall acquire and maintain Property Damage Liability Insurance in an amount of not less than One Million (\$1,000,000) Dollars per occurrence with General Liability extended to provide "Broad Form Property Liability" and in the amount of not less than Three Million (\$3,000,000) Dollars aggregate for damage on account of all occurrences.

§ 5.4.3 Provide Bodily Injury Insurance limits for an amount of not less than One Million (\$1,000,000) Dollars for injuries, including wrongful death to any one person, and subject to the same limit for each person, in an amount of not less than Three Million (\$3,000,000) Dollars on the account of any one occurrence.

§ 5.4.4 Any combination of underlying Comprehensive General/Automobile Liability coverage with Umbrella/Excess Liability coverage which provides not less than Three Million (\$3,000,000) Dollars Single Limit Bodily Injury and Property Liability Insurance for the Contractor will also be acceptable.

§ 5.5 CONTRACTOR'S PROPERTY INSURANCE

§ 5.5.1 The Contractor shall maintain Property Insurance (e.g., Builder's Risk, Installation Floater) to protect itself and the Ohio Historical Society from loss incurred by fire, lightning, extended coverage hazards, vandalism, malicious mischief, and other casualties in the full amount of the Contract and such insurance shall cover all labor and materials connected with the work, including materials delivered to the site and not yet installed in the project. The insurance shall specifically name coverage for loss incurred due to theft. Prior to commencement of any work under this Contract, for each type of insurance coverage under this Section 5.5.1, the Contractor shall furnish to the Owner one (1) original evidence of coverage signed by an authorized representative of the insurer.

§ 5.6 (NOT USED)

§ 5.7 INDEMNIFICATION AND SUBROGATION

§ 5.7.1 The maintaining of such insurance as outlined herein shall in no way constitute a waiver of legal liability for damage to any adjoining buildings or their contents or the work and property of others on the site beyond the limits of insurance thus maintained. The Contractor shall indemnify and hold the Ohio Historical Society, its volunteers, employees, and officers free and harmless from any injury and damage resulting from the negligent or faulty performance of the Contract by the Contractor or subcontractors.

§ 5.7.2 The Contractor shall provide and shall require its Subcontractors to provide insurance under § 5.4 Contractor's Liability Insurance and § 5.5 Contractor's Property Insurance naming the Ohio Historical Society as an additional insured.

§ 5.7.3 The Owner, Contractor, and its subcontractors understand and agree, by entering into this Agreement, to waive subrogation.

§ 5.8 BONDS

§ 5.8.1 The Contractor shall maintain the Contract Bond submitted with the Contractor's Bid and accepted by the Owner.

§ 5.8.2 In the situation in which the Contractor submitted certified funds as its Bid Bond with its Bid, the Contractor shall acquire and maintain a Contract Bond acceptable to the Owner as a condition precedent to the execution of this Agreement.

ARTICLE 6 GENERAL PROVISIONS

§ 6.1 The Contract

The Contract represents the entire and integrated agreement between the parties and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a written modification in accordance with Article 10.

§ 6.2 The Work

The term “Work” means the construction and services required by the Contract Documents, and includes all other labor, materials, equipment, and services provided, or to be provided, by the Contractor to fulfill the Contractor’s obligations.

§ 6.3 Intent

The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all.

§ 6.4 Ownership and Use of Architect’s Drawings, Specifications and Other Documents

Documents prepared by the Architect are instruments of the Architect’s service for use solely with respect to this Project. The Architect shall retain all common law, statutory, and other reserved rights, including the copyright. The Contractor, subcontractors, sub-subcontractors, and suppliers are authorized to use and reproduce the instruments of service solely and exclusively for execution of the Work. The instruments of service may not be used for other Projects or for additions to this Project outside the scope of the Work without the specific written consent of the Architect.

§ 6.5 Electronic Notice

Written notice under this Agreement may be given by one party to the other by email as set forth below.
(Insert requirements for delivering written notice by email such as name, title, and email address of the recipient, and whether and how the system will be required to generate a read receipt for the transmission.)

« »

ARTICLE 7 OWNER

§ 7.1 Information and Services Required of the Owner

§ 7.1.1 If requested by the Contractor, the Owner shall furnish all necessary surveys and a legal description of the site.

§ 7.1.2 Except for permits and fees under Section 8.7.1 that are the responsibility of the Contractor, the Owner shall obtain and pay for other necessary approvals, easements, assessments, and charges.

§ 7.1.3 Prior to commencement of the Work, at the written request of the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner’s obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence.

§ 7.2 Owner’s Right to Stop the Work

If the Contractor fails to correct Work which is not in accordance with the Contract Documents, the Owner may direct the Contractor in writing to stop the Work until the correction is made.

§ 7.3 Owner’s Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies, correct such deficiencies. In such case, the Architect may withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the cost of correction, provided the actions of the Owner and amounts charged to the Contractor were approved by the Architect.

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

§ 7.4.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project.

§ 7.4.2 The Contractor shall coordinate and cooperate with the Owner's own forces and separate contractors employed by the Owner.

§ 7.4.3 Costs caused by delays or by improperly timed activities or defective construction shall be borne by the party responsible therefor.

ARTICLE 8 CONTRACTOR

§ 8.1 Review of Contract Documents and Field Conditions by Contractor

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

§ 8.1.2 The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner. Before commencing activities, the Contractor shall (1) take field measurements and verify field conditions; (2) carefully compare this and other information known to the Contractor with the Contract Documents; and (3) promptly report errors, inconsistencies, or omissions discovered to the Architect.

§ 8.2 Contractor's Construction Schedule

The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work.

§ 8.3 Supervision and Construction Procedures

§ 8.3.1 The Contractor shall supervise and direct the Work using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work.

§ 8.3.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner, through the Architect, the names of subcontractors or suppliers for each portion of the Work. The Contractor shall not contract with any subcontractor or supplier to whom the Owner or Architect have made a timely and reasonable objection.

§ 8.4 Labor and Materials

§ 8.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work.

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

§ 8.5 Warranty

The Contractor warrants to the Owner and Architect that: (1) materials and equipment furnished under the Contract will be new and of good quality unless otherwise required or permitted by the Contract Documents; (2) the Work will be free from defects not inherent in the quality required or permitted; and (3) the Work will conform to the requirements of the Contract Documents. Any material or equipment warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 12.5.

§ 8.6 Taxes

The Contractor shall pay sales, consumer, use, and similar taxes that are legally required when the Contract is executed.

§ 8.6.2 This project is exempt from Ohio sales and use tax. Prior to making the initial purchase under this Contract, the Contractor shall request and receive from the Owner a valid "State of Ohio Department of Taxation Sales and Use Tax Blanket Exemption Certificate," and shall use the Owner's exemption number when purchasing project-relevant goods and materials.

§ 8.7 Permits, Fees and Notices

§ 8.7.1 The Owner shall obtain and pay for the Certificate of Plan Approval issued by the Ohio Department of Commerce, Division of Industrial Compliance.

§ 8.7.2 The Contractor shall schedule and coordinate all life safety inspections required by the State of Ohio Fire Marshal's Office as necessary.

.1 The Owner shall pay the associated initial inspection fees.

.2 The Contractor shall pay for all associated governmental re-inspection fees.

§ 8.7.3 The Contractor shall obtain and pay for all other permits and governmental fees, licenses, and inspections necessary for proper execution and completion of the work.

§ 8.7.4 The Contractor shall schedule and coordinate all inspections required by applicable authorities.

§ 8.7.5 The Contractor shall comply with and give notices required by agencies having jurisdiction over the Work. If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume full responsibility for such Work and shall bear the attributable costs. The Contractor shall promptly notify the Architect in writing of any known inconsistencies in the Contract Documents with such governmental laws, rules, and regulations.

§ 8.8 Submittals

The Contractor shall promptly review, approve in writing, and submit to the Architect shop drawings, product data, samples, and similar submittals required by the Contract Documents. Shop drawings, product data, samples, and similar submittals are not Contract Documents.

§ 8.9 Use of Site

The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits, the Contract Documents, and the Owner.

§ 8.10 Cutting and Patching

The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly.

§ 8.11 Cleaning Up

The Contractor shall keep the premises and surrounding area free from accumulation of debris and trash related to the Work. At the completion of the Work, the Contractor shall remove its tools, construction equipment, machinery, and surplus material; and shall properly dispose of waste materials and timely and fully demobilize from the project site.

§ 8.12 Indemnification

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

ARTICLE 9 ARCHITECT

§ 9.1 The Architect will provide administration of the Contract as described in the Contract Documents. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 9.2 The Architect will visit the site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the Work.

§ 9.3 The Architect will not have control over or charge of, and will not be responsible for, construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility. The Architect will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents.

§ 9.4 Based on the Architect's observations and evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor.

§ 9.5 The Architect has authority to reject Work that does not conform to the Contract Documents.

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

§ 9.7 On written request from either the Owner or Contractor, the Architect will promptly interpret and decide matters concerning performance under, and requirements of, the Contract Documents.

§ 9.8 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from the Contract Documents, and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions rendered in good faith.

§ 9.9 The Architect's duties, responsibilities, and limits of authority as described in the Contract Documents shall not be changed without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

ARTICLE 10 CHANGES IN THE WORK

§ 10.1 The Owner, without invalidating the Contract, may order changes in the Work within the general scope of the Contract, consisting of additions, deletions or other revisions, and the Contract Sum and Contract Time shall be adjusted accordingly, in writing. If the Owner and Contractor cannot agree to a change in the Contract Sum, the Owner shall pay the Contractor its actual cost plus reasonable overhead and profit.

§ 10.2 The Architect may authorize or order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. Such authorization or order shall be in writing and shall be binding on the Owner and Contractor. The Contractor shall proceed with such minor changes promptly.

§ 10.3 If concealed or unknown physical conditions are encountered at the site that differ materially from those indicated in the Contract Documents or from those conditions ordinarily found to exist, the Contract Sum and Contract Time shall be subject to equitable adjustment.

ARTICLE 11 TIME AND LIQUIDATED DAMAGES

§ 11.1 Time limits stated in the Contract Documents are of the essence of the Contract.

§ 11.2 If the Contractor is delayed at any time in progress of the Work by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, or other causes beyond the Contractor's control, the Contract Time shall be subject to equitable adjustment.

§ 11.3 Costs caused by delays or by improperly timed activities or defective construction shall be borne by the responsible party.

§ 11.4 If the Contractor is delayed at any time in progress of the Work by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control, the Contract Time shall be subject to equitable adjustment.

§ 11.5 The Contractor shall prosecute the Work regularly and diligently at a rate of progress that ensures the issuance of a Certificate of Substantial Completion and a Certificate of Final Completion on or before the approved dates as provided in §2.1 and §2.3.

§ 11.6 The Owner will suffer financial loss if the Work is not timely completed. Time is of the essence for completion of the Work. Contractor and its surety shall be liable for and pay the Owner liquidated damages for each day its work exceeds the approved dates for Substantial Completion and Final Completion. Liquidated damages may be deducted by the Owner from any payment due or to become due to the Contractor. The rate of liquidated damages shall be as indicated in the Supplementary Conditions.

§ 11.6.1 It is agreed that the rate of liquidated damages indicated in the Supplementary Conditions is reasonable and that the damages the Owner would sustain are difficult to determine. The foregoing provisions for liquidated damages, shall in no way act as a waiver of the Owner's rights to any other remedy of law, in equity or under the Contract Documents.

§ 11.7 The items listed in the Architect's Certificate of Substantial Completion to be completed or corrected, if any, shall be corrected and completed by the Contractor on or before the approved date of Final Completion.

§ 11.8 Wherever provisions of any Section of the Contract Documents conflict with agreements or regulations in force among members of trade associations, unions, or councils which regulate or distinguish what work shall or shall not be included in the construction activity of any particular trade, the Contractor shall make necessary arrangements to reconcile such conflict without delay, recourse, damage, or cost to the Owner or Architect.

§ 11.9 In case the progress of the Work is affected by undue delay in furnishing or installing items of material or equipment required under the Contract Documents because of a conflict involving labor union agreement or regulation, the Architect may require that other material or equipment of equal kind or quality be provided at no additional cost to the Owner.

§ 11.10 Contractor's written claims for extension of time shall be submitted within 10 days of the issues or circumstances that caused or will cause the Contractor's written claim. Such claims shall be accompanied by detailed dates, correspondence, notices, and other data which provides proof of the events which are the basis for the claim.

§ 11.11 Delays due to tardy shop drawing submittal, tardy material ordering, or shipment, or other delays caused by a supplier of a Subcontractor of the Contractor shall not be deemed valid causes for extension of time, as the scheduling and control of suppliers and Subcontractors is a part of the Contractor's responsibility.

§ 11.12 Time extensions will be granted for legitimate cause on an individual basis. Extensions of time when granted will be by written Change Order, which shall be the only valid form. Where a change in the Work is ordered by written Change Order, the agreed-upon extension of time required because of the change in the Work shall be a part of the Change Order. Permitting the Contractor to continue and finish the Work after the dates to which the time of completion may have been extended, shall in no way operate as a waiver on the part of the Owner of its rights under the contract.

ARTICLE 12 PAYMENTS AND COMPLETION

§ 12.1 Contract Sum

The Contract Sum stated in this Agreement, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 12.2 Applications for Payment

§ 12.2.1 The Contractor shall submit to the Architect an itemized Application for Payment for Work completed in accordance with the values stated in the Agreement. Such Application shall be supported by data substantiating the

Contractor's right to payment as the Owner or Architect may reasonably require. Payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment stored, and protected from damage, off the site at a location agreed upon in writing.

.1 Application and Submittal Period. The period covered by each Application for Payment shall be one calendar month ending on the last day of the month. The Owner will accept an application on the last three (3) work days of the period covered by an Application for Payment and on the first work day of the month following the period covered by an Application for Payment. The Owner will accept and process applications submitted later, however, payment will be delayed as provided below.

.2 Application Form. An application for payment shall be provided in a form mutually accepted by both parties which shall include and is not limited to the following information. *G702-Application and Certification for Payment* published by the American Institute of Architect and *Form F140-01 Contractor Payment Request* published by the State Architect's Office of Ohio are acceptable forms.

- i. the project name and OHS project number
- ii. the start and end dates of the period covered by the application
- iii. original contract amount; the amount of each change authorized by the Owner to date; the contract amount to date;
- vi. a schedule of values in sufficient detail to identify the cost of materials and labor for the various types and major components of the work;
- vii. a percentage of completion for each line item in the schedule of values;
- viii. an area for retainage and an area for Liquidated Damages.
- ix. Contractor's certification that to its knowledge the information on the application is true and accurate;
- x. Architect's certification that based on its on-site observations, knowledge, information, and beliefs the information on the application is true and accurate; and,
- xi. approval and signature block for the Owner.

.3 Progress Review. The Contractor shall establish a schedule with the Architect payment application review meetings that allow sufficient time for the Contractor and Architect to process an application for payment and have it delivered to the Owner to meet the schedule established in §4.1.1. Prior to the end of each period, the Parties shall review a draft of the Application and make adjustments as deemed appropriate. The Contractor shall make the agreed adjustments and submit the adjusted application, including certification to the Architect for its review and certification and subsequent forwarding to the Owner. On each Application for Payment, the Contractor shall show the percentage of completion for each line item in the schedule of values as of the end of the period covered by the Application for Payment.

.4 Amount of Progress Payment. The amount of the progress payment shall be the percentage of the completion of the work at the end of the period times the contract price less ten percent (10%) for retainage and less the amounts paid for prior progress payments.

.5 Payment – for requested payments of less than \$10,000.00. the Application Period in proper form and certified by the Architect for payment, the Owner shall make payment of undisputed amounts within 30 days of the first work day of the month following the period covered by the application and for an application submitted after the Application Period, the Owner shall make payment of undisputed amounts within 60 days of the first work day of the month following the period covered by the application.

.6 Payment – for requested payments of \$10,000.00 and more. Provided an application is submitted within the Application Period in proper form and certified by the Architect for payment, the Owner shall make payment of undisputed amounts within 60 days of the first day of the month following the period covered by the application and for an application submitted after the Application Period, the Owner shall make payment of undisputed amounts within 90 days of the first work day of the month following the period covered by the application.

§ 12.2.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment, however, such transfer of title shall not reduce the Contractor's and surety(ies)

obligations for such Work until the Work achieves Final Completion. The Contractor further warrants that upon submittal of an Application for Payment, all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests, or other encumbrances adverse to the Owner's interests.

§ 12.3 CERTIFICATES FOR PAYMENT

After receipt of the Contractor's Application for Payment, the Architect will timely either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part.

§ 12.4 PROGRESS PAYMENTS

§ 12.4.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner provided in article 12.2.

§ 12.4.2 The Contractor shall promptly pay each subcontractor and supplier, upon receipt of payment from the Owner, an amount determined in accordance with the terms of the applicable subcontracts and purchase orders.

§ 12.4.3 Neither the Owner nor the Architect shall have responsibility for payments to a subcontractor or supplier.

§ 12.4.4 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the requirements of the Contract Documents.

§ 12.5 SUBSTANTIAL COMPLETION

§ 12.5.1 A condition of determining a Substantial Completion shall be the Contractor's correction of all punch list items on the Architect's punch list and the Contractor's total demobilization from the physical site. Preparation of project closeout requirements shall occur at a location of the Contractor's choosing, other than the project site, in the period, if any, between Substantial Completion and Final Completion.

§ 12.5.2 When the Contractor notifies the Architect that the Work or designated portion thereof is substantially complete, the Architect will make an inspection to determine whether the Work is substantially complete. When the Architect determines that the Work is substantially complete the Architect shall prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish the responsibilities of the Owner and Contractor, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

.1 Items remaining on the punch list shall be addressed in accordance with §11.7.

§ 12.6 FINAL COMPLETION AND FINAL PAYMENT

§ 12.6.1 Upon receipt of all project closeout submittals as required by the Contract Documents (e.g., Operating & Maintenance Manuals, as-built documents, permits, warranties) and the final Application for Payment, the Architect will inspect the Work. When the Architect finds the Work acceptable and the contract fully performed, the Architect will promptly issue a final Certificate for Payment.

§ 12.6.2 Final payment shall not become due until the Contractor submits to the Architect releases and waivers of liens, and data establishing payment or satisfaction of obligations, such as receipts, claims, security interests or encumbrances arising out of the Contract and the Contractor's final certified Application for Payment in proper form.

§ 12.6.3 Upon receipt of a final Certificate of Application for Payment in proper form, the Owner shall timely review and approve payment of undisputed amounts. Owner shall make final payment only after the Contractor has fully performed the Contract, except its obligation to timely and properly provide Warranty Work. The Owner's approval and final outstanding balance of the Contract Sum, as provided herein, shall constitute Final Completion.

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

§ 12.6.5 Acceptance of final payment does not relieve the Contractor, subcontractor, or material supplier from their respective responsibilities to honor all warranties and guarantees.

ARTICLE 13 PROTECTION OF PERSONS AND PROPERTY

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs, including all those required by law in connection with performance of the Contract. The Contractor shall take reasonable precautions to prevent damage, injury, or loss to employees on the Work and other persons who may be affected thereby, the Work and materials and equipment to be incorporated therein, and other property at the site or adjacent thereto. The Contractor shall promptly remedy damage and loss to property caused in whole or in part by the Contractor, or by anyone for whose acts the Contractor may be liable.

ARTICLE 14 CORRECTION OF WORK

§ 14.1 The Contractor shall promptly correct Work rejected by the Architect as failing to conform to the requirements of the Contract Documents. The Contractor shall bear the cost of correcting such rejected Work, including the costs of uncovering, replacement, and additional testing.

§ 14.2 In addition to the Contractor's other obligations including warranties under the Contract, the Contractor shall, for a period of one year after Substantial Completion, correct work not conforming to the requirements of the Contract Documents promptly and timely after receiving notice of such work.

§ 14.3 If the Contractor fails to correct nonconforming Work within a reasonable time, the Owner may correct it in accordance with Section 7.3.

ARTICLE 15 MISCELLANEOUS PROVISIONS

§ 15.1 Assignment of Contract

Neither party to the Contract shall assign the Contract as a whole without written consent of the other.

§ 15.2 Tests and Inspections

§ 15.2.1 At the appropriate times, the Contractor shall arrange and bear cost of tests, inspections, and approvals of portions of the Work required by the Contract Documents or by laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities.

§ 15.2.2 If the Architect requires additional testing, the Contractor shall perform those tests.

§ 15.2.3 The Owner shall bear cost of tests, inspections, or approvals that do not become requirements until after the Contract is executed. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 15.3 Governing Law

The Contract shall be governed by the law of the State of Ohio.

§ 15.4 CLAIMS AND DISPUTES

§ 15.4.1 Claims, disputes and other matters in question arising out of or relating to this contract, including those alleging an error or omission by the Architect, shall be referred initially to the Architect for decision. Such matters, except those related to aesthetic effect and those waived as provided by this Contract, shall, after initial decision by the Architect or thirty days after submissions to the Architect, be subject to mediation as a condition precedent to the continuation of legal or equitable proceedings as provided in **§15.4.4**.

§15.4.2 Any legal action arising out of or related to this contract shall be brought in the Common Pleas Court of Franklin County, Ohio, unless the amount in dispute is less than \$15,000.00, in which case, the action shall be brought in the Franklin County Municipal Court located in Franklin County, Ohio.

§ 15.4.3 In any legal action arising out of or related to this contract, each of the parties agrees to waive the right to trial by jury.

§15.4.4 In any legal action arising out of or related to this contract either party may demand that the matter be

submitted to mediation in which case the matter shall be mediated by a mediator agreed upon by the parties, and in the event the parties can not agree upon a mediator, by a mediator appointed by the judge to whom the case is assigned. Mediation shall be initiated by the serving of a demand for mediation on the other party with the proposed name of a mediator.

Within seven days after receipt of such demand, the party receiving the demand shall notify the party serving the demand whether it agrees to the mediator proposed, and if not, the name of a mediator proposed by such party. The party making it the demand for mediation shall notify the other party within seven days whether the party making the demand agrees to the proposed mediator. If the parties do not agree upon a mediator, either party may request the Court to appoint a mediator who may be a magistrate of such Court. If a demand for mediation is made all discovery proceedings in the legal action shall be stayed and no motions shall be filed until the mediation is completed. The time and place of the mediation conference shall be set by the mediator. No statements made by a party during the mediation shall be used in evidence at the trial of the action. The expense of the mediator, if any, shall be divided equally between the parties.

§ 15.5 CLAIMS FOR CONSEQUENTIAL DAMAGES

§ 15.5.1 The Contractor and Owner waive claims against each other for consequential damages arising out of or relating to the Contract. This mutual waiver includes:

- .1 Damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and,
- .2 Damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, for loss of profit except anticipated profit arising directly from the Work, and for any amount which the Contractor is required to reimburse the surety by reason of expenses incurred by the surety related to correction or completion of the Work.

§ 15.5.2 This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 16. Nothing contained in this Section shall be deemed to preclude an award of liquidated direct damages, when applicable, in accordance with the requirements of the Contract Documents.

ARTICLE 16 TERMINATION OF THE CONTRACT

§ 16.1 Termination by the Contractor

§ 16.1.1 If the Architect fails to certify payment as provided in §12.3 through no fault of the Contractor, or if the Owner fails to make payment as provided in §12.4.1, the Contractor may, upon seven additional days written notice to the Owner and the Architect, terminate the Contract in which case the Contractor shall be entitled to be paid for Work executed and for proven loss with respect to materials, equipment, tools, and construction equipment and machinery ordered in reliance upon the contract, and for reasonable overhead and profit on the remainder of the Work that was not completed.

§ 16.1.2 Owner payment of undisputed amounts to the Contractor within seven (7) additional days shall render null and void the Contractor's right to terminate the Contract as provided in §16.1.1 and the Contractor shall continue to faithfully and diligently execute the Work under this Contract and shall not be entitled to additional payment for claims of loss with respect to materials, equipment, tools, and construction equipment and machinery ordered nor for additional overhead and profit.

§ 16.2 Termination by the Owner for Cause

§ 16.2.1 The Owner may terminate the Contract if the Contractor

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

§ 16.2.2 When any of the above reasons exist, the Owner, after consultation with the Architect, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may

- .1 take possession of the site and of all materials thereon owned by the Contractor, and
- .2 finish the Work by whatever reasonable method the Owner may deem expedient.

§ 16.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 16.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 16.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the Owner. This obligation for payment shall survive termination of the Contract.

§ 16.3 Termination by the Owner for Convenience

The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause. The Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

§ 16.4 Under no circumstances shall the Owner be liable to the Contractor and the Contractor's Surety, if the Surety takes over the Contract, for more than the contract price.

ARTICLE 17 OTHER TERMS AND CONDITIONS

(Insert any other terms or conditions below.)

« »

This Agreement entered into as of the day and year first written above.

(If required by law, insert cancellation period, disclosures or other warning statements above the signatures.)

« »

« »

OWNER *(Signature)*

« »« »

(Printed name and title)

« »

CONTRACTOR *(Signature)*

« »« »

(Printed name and title)

LICENSE NO.:

JURISDICTION:

SECTION 00 73 00 SUPPLEMENTARY CONDITIONS

PART 1 – GENERAL

1.1 SUMMARY

- A. These Supplementary Conditions are a part of and are attached to the Contract Documents as provided in the American Institute of Architects (AIA) Document *A105-2017 Standard Form of Agreement Between Owner and Contractor for a Small or Commercial Project* for this project.
- B. These Supplementary Conditions modify the AIA document(s) as originally published by the AIA and listed above for this project.

PART 2 – CONTRACT MODIFICATIONS

2.1 REFER TO §2.1 CONTRACT TIME

- A. The Contract Time extends to the Date of Final Completion as provided below.

2.2 REFER TO §2.3 SUBSTANTIAL AND FINAL COMPLETION

- A. The Date of Commencement shall be no more than 14 days following filing of Notice to Proceed, on September 1, 2025.
- B. Substantial Completion shall occur no more than 241 calendar days following Date of Commencement and shall be no later than April 30, 2026.
- C. Final Completion shall occur no more than 255 days following Date of Commencement.

2.3 REFER TO §10.1 CHANGES IN THE WORK

- A. § 10.1.1 The limit for the combined overhead and profit included in the total cost to the Owner shall be based on the following schedule:
 - 1. For the Contractor, for Work performed by the Contractor's own forces, fifteen percent (15%) of the cost.
 - 2. For the Contractor, for Work performed by the Contractor's Subcontractor, maximum of five percent (5%) of the amount due between Prime Contractor and Subcontractor. For the Subcontractor, for Work performed by the Subcontractor's own forces, ten percent (10%) of the cost.
 - 3. Cost to which overhead and profit is to be applied shall be determined in accordance with Subparagraph 7.3.7.
 - 4. In order to facilitate checking of quotations for extras and credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials, and Subcontracts. Labor and material shall be itemized in the manner prescribed above. Where major cost items are Subcontracts, they shall be itemized also.

5. Overhead and profit shall include, but not be limited to, the following:
 - a. home office expense;
 - b. field office expense;
 - c. supervision;
 - d. project management & estimation; and
 - e. small tools & equipment

2.4 REFER TO §11.5 RATES OF LIQUIDATED DAMAGES

- A. The following rates for Liquidated Damages apply to this Contract:
 1. Substantial Completion date exceeded: \$750.00/ day.
 2. Final Completion date exceeded: \$750.00/ day.

PART 3 – ADDITIONAL SUPPLEMENTARY CONDITIONS

3.1 APPALACHIAN COMMUNITY GRANT PROGRAM (ACGP) REQUIREMENTS

- A. Prevailing Wage Rates:

Each laborer, worker, or mechanic employed by the contractor performing work on the project shall be paid not less than the applicable prevailing wage rates pursuant to Ohio Revised Code Chapter 4115 and shall provide all related documentation required by the Contract Documents or requested by the Owner. The contractor shall adjust and shall require its subcontractors and sub-subcontractors, regardless of tier, to adjust the wage rates to conform to the current rates if the applicable wage rates change prior to completion of the work, without increase in the contract amount or price. The contract can access applicable prevailing wage rates at <https://com.ohio.gov/divisions-and-programs/industrial-compliance/wage-and-hour/guides-and-resources/view-prevailing-wage-rates>.
- B. Appalachian Community Grant Program:

The project will be funded through federal funds made available by the Appalachian Community Grant Program (“ACGP”) through the American Rescue Plan Act (“ARPA”) and will be subject to compliance with the requirements for ACGP and ARPA funded projects. The contractor shall comply with all applicable ACGP and ARPA requirements and assist Owner with such compliance.
- C. Record Retention:

The contractor shall comply with the record retention requirements detailed in 2 CFR § 200.334 and the Appalachian Community Grant Program Grant Agreement entered into between the Ross County Board of Commissioners, and the Mount Zion Black Cultural Center. Therefore, financial records, supporting documents, statistical records, and all other records pertinent to the state and federal award must be retained for a period of five years from the date of the completion of the project.
- D. Access to Records:

The contractor shall comply with the access to records requirements detailed in 2 CFR §

200.337. The Federal awarding agency, Inspectors General, the Comptroller General of the United States, and the pass-through entity, or any of their authorized representatives, must have the right of access to any documents, papers, or other records of the Architect which are pertinent to the Federal award, in order to make audits, examinations, excerpts, and transcripts. The right also includes timely and reasonable access to the Architect's personnel for the purpose of interview and discussion related to such documents.

- E. No Findings for Recovery:
The contractor represents that the contractor is not subject to a finding for recovery under Section 9.24, Ohio Revised Code, or that the contractor has taken the appropriate remedial steps required under Section 9.24, Ohio Revised Code, or otherwise qualifies under this section. If this representation and warranty is found to be false, the Contract is void, and contractor will immediately repay owner any funds paid to contractor under this contract.
- F. ACGP Minority Hiring Goal Compliance:
Contractor shall make a good faith effort to employ minority persons in the same percentage as the average percentage of minority persons who reside in the county in which the project is located and any contiguous Ohio counties. Contractor shall submit with it's the attached ACGP Minority Hiring Goal Compliance Plan.

END OF SECTION

SECTION 00 73 46 – PREVAILING WAGE DETERMINATION AND RATES

OHC Project No. CP2401
Grant Boyhood Historic Sites
ACGP Restoration

PART 1 – GENERAL

1.1 SUMMARY

- A. The Prevailing Rates of Wages and required forms may be accessed through the Ohio Department of Commerce website:

<https://com.ohio.gov/divisions-and-programs/industrial-compliance/wage-and-hour/guides-and-resources/bid-packet-preparation>

- B. The following wage rate information shall be furnished to the prevailing wage coordinator as designated by the owner.
1. Every contractor and/or subcontractor as soon as he begins work under this contract shall furnish to the prevailing wage coordinator, a schedule of dates during the life of the contract for which he will pay wage to employees of the project. He shall also deliver to the prevailing wage coordinator monthly two (2) certified copies of his payroll for the project.
 2. Each report (monthly) shall state the period covered and exhibit for each employee paid on the project, his name, current address, social security number, number of hours worked each day on the project during the reporting period, the total hours each week on the project as well as the total work on other projects, his hourly rate, his job classification, fringe payment, all deductions from his wages and net pay.
 3. Each report shall also have certification executed by the contractor, subcontractor, or duly appointed agent thereof. It shall recite that the payroll is correct and complete and that the rates shown are not less than those required by the contract. It shall also state the name of the union or plan to whom the withheld or unpaid fringes are to be paid. The first report shall also list each fringe and state if it is paid as cash to the employee or to named plan.
 4. Upon final completion and prior to final payment, the contractor shall execute, deliver, and require its subcontractors to execute and deliver to the prevailing wage coordinator an affidavit stating that the contractor/subcontractor has fully complied with Section 4115.03 to 4115.16 Ohio Revised Code. The contract sum will not be increased because of increases in the prevailing wages or wage rates.

PART 2 – NOT USED

PART 3 – NOT USED

END OF SECTION

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Prevailing Wage Rates

Each laborer, worker, or mechanic employed by the contractor performing work on the project shall be paid not less than the applicable prevailing wage rates pursuant to Ohio Revised Code Chapter 4115 and shall provide all related documentation required by the Contract Documents or requested by the Owner. The contractor shall adjust and shall require its subcontractors and sub-subcontractors, regardless of tier, to adjust the wage rates to conform to the current rates if the applicable wage rates change prior to completion of the work, without increase in the contract amount or price. The contract can access applicable prevailing wage rates at <https://com.ohio.gov/divisions-and-programs/industrial-compliance/wage-and-hour/guides-and-resources/view-prevailing-wage-rates>.

Appalachian Community Grant Program. The project will be funded through federal funds made available by the Appalachian Community Grant Program (“ACGP”) through the American Rescue Plan Act (“ARPA”) and will be subject to compliance with the requirements for ACGP and ARPA funded projects. The contractor shall comply with all applicable ACGP and ARPA requirements and assist Owner with such compliance.

Record Retention. The contractor shall comply with the record retention requirements detailed in 2 CFR § 200.334 and the Appalachian Community Grant Program Grant Agreement entered into between the Ross County Board of Commissioners, and the Mount Zion Black Cultural Center. Therefore, financial records, supporting documents, statistical records, and all other records pertinent to the state and federal award must be retained for a period of five years from the date of the completion of the project.

Access to Records. The contractor shall comply with the access to records requirements detailed in 2 CFR § 200.337. The Federal awarding agency, Inspectors General, the Comptroller General of the United States, and the pass-through entity, or any of their authorized representatives, must have the right of access to any documents, papers, or other records of the Architect which are pertinent to the Federal award, in order to make audits, examinations, excerpts, and transcripts. The right also includes timely and reasonable access to the Architect's personnel for the purpose of interview and discussion related to such documents.

No Findings for Recovery. The contractor represents that the contractor is not subject to a finding for recovery under Section 9.24, Ohio Revised Code, or that the contractor has taken the appropriate remedial steps required under Section 9.24, Ohio Revised Code, or otherwise qualifies under this section. If this representation and warranty is found to be false, the Contract is void, and contractor will immediately repay owner any funds paid to contractor under this contract.

Prevailing Wage Rate Skilled Crafts

Name of Union: Bricklayer Local 23 (Bellaire Industrial)

Type of Rate: Commercial

Change #:
LCN01-2024ib

Craft:
Bricklayer

Effective Date:
7/1/2024

Effective Date:
7/1/2024

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Bricklayer	\$32.52		\$9.88	\$10.73	\$0.83	\$0.00	\$5.03	\$0.00	\$0.00	\$0.00	\$58.99	\$75.25
Block Stone and Cement Mason	\$32.52		\$9.88	\$10.73	\$0.83	\$0.00	\$5.03	\$0.00	\$0.00	\$0.00	\$58.99	\$75.25
Saw Man	\$32.02		\$9.88	\$10.73	\$0.83	\$0.00	\$5.03	\$0.00	\$0.00	\$0.00	\$58.49	\$74.50
Apprentice	BHR	Percent										
1st 6 months 0-750 hrs	\$19.51	\$60.00	\$9.88	\$10.73	\$0.83	\$0.00	\$5.03	\$0.00	\$0.00	\$0.00	\$45.98	\$55.74
2nd 6 months 1501-2250 hrs	\$21.14	\$65.00	\$9.88	\$10.73	\$0.83	\$0.00	\$5.03	\$0.00	\$0.00	\$0.00	\$47.61	\$58.18
3rd 6 months 751-1500 hrs	\$22.76	\$70.00	\$9.88	\$10.73	\$0.83	\$0.00	\$5.03	\$0.00	\$0.00	\$0.00	\$49.23	\$60.62
4th 6 months 2251-3000 hrs	\$24.39	\$75.00	\$9.88	\$10.73	\$0.83	\$0.00	\$5.03	\$0.00	\$0.00	\$0.00	\$50.86	\$63.06
5th 6 months 3001-3750 hrs	\$26.02	\$80.00	\$9.88	\$10.73	\$0.83	\$0.00	\$5.03	\$0.00	\$0.00	\$0.00	\$52.49	\$65.49
6th 6 months 3751-4500 hrs	\$27.64	\$85.00	\$9.88	\$10.73	\$0.83	\$0.00	\$5.03	\$0.00	\$0.00	\$0.00	\$54.11	\$67.93
7th 6 months 4501-5250 hrs	\$29.27	\$90.00	\$9.88	\$10.73	\$0.83	\$0.00	\$5.03	\$0.00	\$0.00	\$0.00	\$55.74	\$70.37
8th 6 months 5251-6000 hrs	\$30.89	\$95.00	\$9.88	\$10.73	\$0.83	\$0.00	\$5.03	\$0.00	\$0.00	\$0.00	\$57.36	\$72.81

(*)Special Calculation Note :

Ratio :

1 - 4 Journeymen to 1 Apprentice 5-8 Journeymen to 2 Apprentice 9-12 Journeymen to 3 Apprentice 13-16 Journeymen to 4 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Belmont, Jefferson*, Monroe

Special Jurisdictional Note :

In Jefferson County: townships of Warren, Mt. Pleasant, and all of Dillonvale.

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Bricklayer Local 23 (Cleveland Marble, Terrazzo, & Mosaic)

Type of Rate: Commercial

Change #:
LCN01-2024ib

Craft:
Bricklayer

Effective Date:
5/1/2024

Effective Date:
5/1/2024

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Bricklayer Marble, Terrazzo, Mosaic	\$37.96		\$11.40	\$9.45	\$0.78	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$59.59	\$78.57
Swing Scaffold Workers	\$38.96		\$11.40	\$9.45	\$0.78	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$60.59	\$80.07
Stack	\$38.46		\$11.40	\$9.45	\$0.78	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$60.09	\$79.32
Masonry Maintenance	\$17.08		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$17.08	\$25.62
Apprentice	BHR	Percent										
1st 6 months	\$22.78	\$60.00	\$11.40	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$34.18	\$45.56
2nd 6 months	\$24.67	\$65.00	\$11.40	\$9.45	\$0.78	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$46.30	\$58.64
3rd 6 months	\$26.57	\$70.00	\$11.40	\$9.45	\$0.78	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$48.20	\$61.49
4th 6 months	\$28.47	\$75.00	\$11.40	\$9.45	\$0.78	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$50.10	\$64.34
5th 6 months	\$30.37	\$80.00	\$11.40	\$9.45	\$0.78	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$52.00	\$67.18
6th 6 months	\$32.27	\$85.02	\$11.40	\$9.45	\$0.78	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$53.90	\$70.04
7th 6 months	\$34.16	\$90.00	\$11.40	\$9.45	\$0.78	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$55.79	\$72.88
8th 6 months	\$36.06	\$95.00	\$11.40	\$9.45	\$0.78	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$57.69	\$75.72
MASON TRAINEES 1st 90 Days	\$17.08	\$45.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$17.08	\$25.62
1st Year after 90 Days	\$17.08	\$45.00	\$11.40	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$28.48	\$37.02
2nd Year	\$18.98	\$50.00	\$11.40	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$30.38	\$39.87

(*)Special Calculation Note :

Classification title contains "Bricklayer" because contract originates within the Bricklayer Local.

Ratio :

1-2 Journeyman to 1 Apprentice 3-4 Journeyman to 2 Apprentices 5-6 Journeyman to 3 Apprentices 7-10
Journeyman to 4 Apprentices 1 Apprentice permits 1 Mason Trainee 2 Apprentice permits 1 Mason Trainee 3
Apprentice permits 2 Mason Trainee 4 Apprentice permits 2 Mason Trainee

Jurisdiction (* denotes special jurisdictional note) :

Ashtabula, Geauga, Lake, Portage, Summit

Special Jurisdictional Note :

Details :

In the mutual interest of both Employer and Union and to promote the masonry industry, it is agreed that the Employer may work with the Union and the Local Educational Partners in the jurisdiction of this agreement to employ School to work students provided that no conflicts exist with any Federal or State Laws. Employer must be party to a bonified Apprenticeship and Training program registered with the State of Ohio (OSAC). It is further agreed by both parties that the wages for the Masonry Maintenance Specialist shall be forty-five percent (45%) of the journeyman rate with no fringe benefits or as specified by the Local Educational Partner in the jurisdiction of the agreement.

Prevailing Wage Rate Skilled Crafts

Name of Union: Bricklayer Local 23 (Cleveland Zone 2 Tile Layer)

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Bricklayer

Effective Date:
5/7/2025

Effective Date:
5/7/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Bricklayer Tile Layer	\$34.17		\$9.70	\$3.83	\$0.70	\$0.00	\$1.75	\$0.00	\$0.00	\$0.00	\$50.15	\$67.24
Apprentice	BHR	Percent										
1st 30 days	\$20.50	\$60.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$20.50	\$30.75
1st 6 months	\$20.50	\$60.00	\$9.70	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$30.20	\$40.45
2nd 6 months	\$22.21	\$65.00	\$9.70	\$3.83	\$0.70	\$0.00	\$1.75	\$0.00	\$0.00	\$0.00	\$38.19	\$49.30
3rd 6 months	\$23.92	\$70.00	\$9.70	\$3.83	\$0.70	\$0.00	\$1.75	\$0.00	\$0.00	\$0.00	\$39.90	\$51.86
4th 6 months	\$25.63	\$75.00	\$9.70	\$3.83	\$0.70	\$0.00	\$1.75	\$0.00	\$0.00	\$0.00	\$41.61	\$54.42
5th 6 months	\$27.34	\$80.00	\$9.70	\$3.83	\$0.70	\$0.00	\$1.75	\$0.00	\$0.00	\$0.00	\$43.32	\$56.98
6th 6 months	\$29.04	\$85.00	\$9.70	\$3.83	\$0.70	\$0.00	\$1.75	\$0.00	\$0.00	\$0.00	\$45.02	\$59.55
7th 6 months	\$30.75	\$90.00	\$9.70	\$3.83	\$0.70	\$0.00	\$1.75	\$0.00	\$0.00	\$0.00	\$46.73	\$62.11
8th 6 months	\$32.46	\$95.00	\$9.70	\$3.83	\$0.70	\$0.00	\$1.75	\$0.00	\$0.00	\$0.00	\$48.44	\$64.67

(*)Special Calculation Note :

Classification title contains "Bricklayer" because contract originates within the Bricklayer Local. Note that the classification description is clarified after the local union number at the top of the page.

Ratio :

1-4 Journeyman to 1 Apprentice 5-10 Journeymen to 2 Apprentice 11-16 Journeymen to 3 Apprentices

Jurisdiction (* denotes special jurisdictional note) :

Portage, Summit

Special Jurisdictional Note :

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Bricklayer Local 23 (East Liverpool Refractory)

Type of Rate: Commercial

Change #:
LCN01-2023ib

Craft:
Bricklayer

Effective Date:
7/5/2023

Effective Date:
7/5/2023

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Bricklayer Refractory Specialist	\$37.99		\$9.40	\$6.04	\$0.96	\$0.00	\$5.60	\$0.00	\$0.00	\$0.00	\$59.99	\$78.99
Hot Work	\$41.41		\$9.40	\$6.04	\$0.96	\$0.00	\$5.60	\$0.00	\$0.00	\$0.00	\$63.41	\$84.12
Saw Man	\$38.49		\$9.40	\$6.04	\$0.96	\$0.00	\$5.60	\$0.00	\$0.00	\$0.00	\$60.49	\$79.74
Apprentice	BHR	Percent										
1st 6 months	\$22.79	\$60.00	\$9.40	\$6.04	\$0.96	\$0.00	\$5.60	\$0.00	\$0.00	\$0.00	\$44.79	\$56.19
2nd 6 months	\$24.69	\$65.00	\$9.40	\$6.04	\$0.96	\$0.00	\$5.60	\$0.00	\$0.00	\$0.00	\$46.69	\$59.04
3rd 6 months	\$26.59	\$70.00	\$9.40	\$6.04	\$0.96	\$0.00	\$5.60	\$0.00	\$0.00	\$0.00	\$48.59	\$61.89
4th 6 months	\$28.49	\$75.00	\$9.40	\$6.04	\$0.96	\$0.00	\$5.60	\$0.00	\$0.00	\$0.00	\$50.49	\$64.74
5th 6 months	\$30.39	\$80.00	\$9.40	\$6.04	\$0.96	\$0.00	\$5.60	\$0.00	\$0.00	\$0.00	\$52.39	\$67.59
6th 6 months	\$32.29	\$85.00	\$9.40	\$6.04	\$0.96	\$0.00	\$5.60	\$0.00	\$0.00	\$0.00	\$54.29	\$70.44
7th 6 months	\$34.19	\$90.00	\$9.40	\$6.04	\$0.96	\$0.00	\$5.60	\$0.00	\$0.00	\$0.00	\$56.19	\$73.29
8th 6 months	\$36.09	\$95.00	\$9.40	\$6.04	\$0.96	\$0.00	\$5.60	\$0.00	\$0.00	\$0.00	\$58.09	\$76.14

(*)Special Calculation Note :

No special calculations for this skilled craft wage rate are required at this time. Classification title contains "Bricklayer" because contract originates within the Bricklayer Local. Note that the classification description is clarified after the local union number at the top of the page.

Ratio :

1 - 4 Journeymen to 1 Apprentice 5 - 8 Journeymen to 2 Apprentice 9 - 12 Journeymen to 3 Apprentice 13 - 16 Journeymen to 4 Apprentice 1 Apprentice permits 1 Trainee 2 Apprentice permits 1 Trainee 3 Apprentice permits 2 Trainees 4 Apprentice permits 2 Trainees

Jurisdiction (* denotes special jurisdictional note) :

Columbiana, Harrison, Jefferson*

Special Jurisdictional Note :

Jefferson County included except Warren and Mt. Pleasant Townships and the Dillonvale.

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Bricklayer Local 23 (Fremont)

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Bricklayer

Effective Date:
6/1/2025

Effective Date:
6/1/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Bricklayer	\$38.17		\$10.50	\$11.90	\$0.84	\$0.00	\$2.00	\$0.00	\$0.00	\$0.00	\$63.41	\$82.50
Stone Mason	\$38.17		\$10.50	\$11.90	\$0.84	\$0.00	\$2.00	\$0.00	\$0.00	\$0.00	\$63.41	\$82.50
Pointer Caulker Cleaner	\$38.17		\$10.50	\$11.90	\$0.84	\$0.00	\$2.00	\$0.00	\$0.00	\$0.00	\$63.41	\$82.50
Layout Man	\$38.17		\$10.50	\$11.90	\$0.84	\$0.00	\$2.00	\$0.00	\$0.00	\$0.00	\$63.41	\$82.50
Saw Man	\$38.17		\$10.50	\$11.90	\$0.84	\$0.00	\$2.00	\$0.00	\$0.00	\$0.00	\$63.41	\$82.50
Stack Worker	\$39.67		\$10.50	\$11.90	\$0.84	\$0.00	\$2.00	\$0.00	\$0.00	\$0.00	\$64.91	\$84.75
Carbon Masonry and Swing Sand Blasting	\$39.67		\$10.50	\$11.90	\$0.84	\$0.00	\$2.00	\$0.00	\$0.00	\$0.00	\$64.91	\$84.75
Refractory Hot Work	\$40.67		\$10.50	\$11.90	\$0.84	\$0.00	\$2.00	\$0.00	\$0.00	\$0.00	\$65.91	\$86.25
Masonry Maintenance Specialist	\$19.09		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$19.09	\$28.64
Apprentice	BHR	Percent										
1st 6 Months	\$22.90	\$60.00	\$10.50	\$11.90	\$0.84	\$0.00	\$2.00	\$0.00	\$0.00	\$0.00	\$48.14	\$59.59
2nd 6 Months	\$24.81	\$65.00	\$10.50	\$11.90	\$0.84	\$0.00	\$2.00	\$0.00	\$0.00	\$0.00	\$50.05	\$62.46
3rd 6 Months	\$26.72	\$70.00	\$10.50	\$11.90	\$0.84	\$0.00	\$2.00	\$0.00	\$0.00	\$0.00	\$51.96	\$65.32
4th 6 Months	\$28.63	\$75.00	\$10.50	\$11.90	\$0.84	\$0.00	\$2.00	\$0.00	\$0.00	\$0.00	\$53.87	\$68.18
5th 6 Months	\$30.54	\$80.00	\$10.50	\$11.90	\$0.84	\$0.00	\$2.00	\$0.00	\$0.00	\$0.00	\$55.78	\$71.04
6th 6 Months	\$32.44	\$85.00	\$10.50	\$11.90	\$0.84	\$0.00	\$2.00	\$0.00	\$0.00	\$0.00	\$57.68	\$73.91
7th 6 Months	\$34.35	\$90.00	\$10.50	\$11.90	\$0.84	\$0.00	\$2.00	\$0.00	\$0.00	\$0.00	\$59.59	\$76.77
8th 6 Months	\$36.26	\$95.00	\$10.50	\$11.90	\$0.84	\$0.00	\$2.00	\$0.00	\$0.00	\$0.00	\$61.50	\$79.63
MASON TRAINEES 1-90 Days	\$22.90	\$60.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2.00	\$0.00	\$0.00	\$0.00	\$24.90	\$36.35
91-365 Days	\$22.90	\$60.00	\$10.50	\$0.00	\$0.00	\$0.00	\$2.00	\$0.00	\$0.00	\$0.00	\$35.40	\$46.85
2nd Year	\$26.72	\$70.00	\$10.50	\$0.00	\$0.00	\$0.00	\$2.00	\$0.00	\$0.00	\$0.00	\$39.22	\$52.58

(*)Special Calculation Note :

No special calculations for this skilled craft wage rate are required at this time.

Ratio :

1-2 Journeyman to 1 Apprentice 3-4 Journeyman to 2 Apprentice 5-6 Journeyman to 2 Apprentice 6-10 Journeyman to 3 Apprentice Apprentices must be hired prior to hiring Mason Trainees Mason Trainee Ratio 1 Apprentice permits 1 Mason Trainee 2 Apprentice permits 1 Mason Trainee 3 Apprentice permits 2 Mason Trainee 4 Apprentice permits 2 Mason Trainee

Jurisdiction (* denotes special jurisdictional note) :

Erie, Hancock, Huron, Ottawa, Sandusky*, Seneca, Wood*

Special Jurisdictional Note :

The Islands of Lake Erie north of Sandusky and the Townships of Perry and Bloom in Wood County.

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Bricklayer Local 23 (Zanesville)

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Bricklayer

Effective Date:
6/1/2025

Effective Date:
6/1/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Bricklayer	\$33.47		\$10.00	\$7.22	\$0.78	\$0.00	\$1.00	\$0.00	\$0.00	\$0.00	\$52.47	\$69.21
Blocklayer	\$33.47		\$10.00	\$7.22	\$0.78	\$0.00	\$1.00	\$0.00	\$0.00	\$0.00	\$52.47	\$69.21
Pointer Caulker Cleaner	\$33.47		\$10.00	\$7.22	\$0.78	\$0.00	\$1.00	\$0.00	\$0.00	\$0.00	\$52.47	\$69.21
Refractory Specialist	\$34.35		\$10.00	\$7.22	\$0.78	\$0.00	\$1.00	\$0.00	\$0.00	\$0.00	\$53.35	\$70.53
Gunnite Nozzleman	\$34.35		\$10.00	\$7.22	\$0.78	\$0.00	\$1.00	\$0.00	\$0.00	\$0.00	\$53.35	\$70.53
Cement Mason	\$33.47		\$10.00	\$7.22	\$0.78	\$0.00	\$1.00	\$0.00	\$0.00	\$0.00	\$52.47	\$69.21
Mason Trainee	\$		\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1-90 Days	\$16.74		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$16.74	\$25.11
91-365 Days	\$16.74		\$10.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$26.74	\$35.11
366 Plus Days	\$20.08		\$10.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$30.08	\$40.12
Apprentice	BHR	Percent										
1st 6 months	\$20.08	\$60.00	\$10.00	\$7.22	\$0.78	\$0.00	\$1.00	\$0.00	\$0.00	\$0.00	\$39.08	\$49.12
2nd 6 months	\$21.76	\$65.00	\$10.00	\$7.22	\$0.78	\$0.00	\$1.00	\$0.00	\$0.00	\$0.00	\$40.76	\$51.63
3rd 6 months	\$23.43	\$70.00	\$10.00	\$7.22	\$0.78	\$0.00	\$1.00	\$0.00	\$0.00	\$0.00	\$42.43	\$54.14
4th 6 months	\$25.10	\$75.00	\$10.00	\$7.22	\$0.78	\$0.00	\$1.00	\$0.00	\$0.00	\$0.00	\$44.10	\$56.65
5th 6 months	\$26.78	\$80.00	\$10.00	\$7.22	\$0.78	\$0.00	\$1.00	\$0.00	\$0.00	\$0.00	\$45.78	\$59.16
6th 6 months	\$28.45	\$85.00	\$10.00	\$7.22	\$0.78	\$0.00	\$1.00	\$0.00	\$0.00	\$0.00	\$47.45	\$61.67
7th 6 months	\$30.12	\$90.00	\$10.00	\$7.22	\$0.78	\$0.00	\$1.00	\$0.00	\$0.00	\$0.00	\$49.12	\$64.18
8th 6 months	\$31.80	\$95.00	\$10.00	\$7.22	\$0.78	\$0.00	\$1.00	\$0.00	\$0.00	\$0.00	\$50.80	\$66.69

(*)Special Calculation Note :

Ratio :

1-2 Journeyman to 1 Apprentice 3-4 Journeyman to 2 Apprentice 5-6 Journeyman to 2 Apprentice 7-10 Journeyman to 3 Apprentice Mason Trainee Ratio 1 Apprentice permits 1 Mason Trainee 2 Apprentice permits 1 Mason Trainee 3 Apprentice permits 2 Mason Trainee 4 Apprentice permits 2 Mason Trainee

Jurisdiction (* denotes special jurisdictional note) :

Coshocton, Fairfield, Guernsey, Hocking, Knox, Licking, Morgan, Muskingum, Noble*, Perry

Special Jurisdictional Note :

In Noble County the following townships are included: (Beaver, Buffalo, Wayne and Seneca)

Details :

BAT registered apprentice must be employed prior to hiring mason trainee (s). A mason trainee MAY NOT work on a jobsite unless a registered apprentice is on the job.

Prevailing Wage Rate Skilled Crafts

Name of Union: Bricklayer Local 7

Type of Rate: None

Change #:
LCN01-2010jcLoc7

Craft:
Bricklayer

Effective Date:
6/7/2010

Effective Date:
6/7/2010

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Bricklayer Tile Marble Terrazzo Finisher	\$23.70		\$5.80	\$2.45	\$0.60	\$0.00	\$0.00	\$0.00	\$	\$	\$32.55	\$44.40
Apprentice	BHR	Percent										
1st 6 Months	\$14.22	\$60.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$	\$	\$14.22	\$21.33
2nd 6 Months	\$16.59	\$70.00	\$5.80	\$2.45	\$0.60	\$0.00	\$0.00	\$0.00	\$	\$	\$25.44	\$33.74
3rd 6 Months	\$17.78	\$75.00	\$5.80	\$2.45	\$0.60	\$0.00	\$0.00	\$0.00	\$	\$	\$26.63	\$35.51
4th 6 Months	\$18.96	\$80.00	\$5.80	\$2.45	\$0.60	\$0.00	\$0.00	\$0.00	\$	\$	\$27.81	\$37.29
5th 6 Months	\$20.15	\$85.00	\$5.80	\$2.45	\$0.60	\$0.00	\$0.00	\$0.00	\$	\$	\$29.00	\$39.07
6th 6 Months	\$21.33	\$90.00	\$5.80	\$2.45	\$0.60	\$0.00	\$0.00	\$0.00	\$	\$	\$30.18	\$40.85

(*)Special Calculation Note :

No special calculations for this skilled craft wage rate are required at this time.

Ratio :

5 Journeymen to 1 Apprentice 10 Journeymen to 2 Apprentices 15 Journeymen to 2 Apprentices 20 Journeymen to 4 Apprentices 25 Journeymen to 5 Apprentices

Jurisdiction (* denotes special jurisdictional note) :

Portage, Summit

Special Jurisdictional Note :

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Carpenter & Pile Driver Local 650 SC District C1 Commercial

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Carpenter

Effective Date:
6/25/2025

Effective Date:
6/25/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Carpenter	\$32.46		\$9.28	\$14.48	\$0.99	\$0.00	\$4.18	\$0.29	\$0.00	\$0.00	\$61.68	\$77.91
Apprentice	BHR	Percent										
1st 6 Months	\$19.48	\$60.00	\$9.28	\$8.98	\$0.99	\$0.00	\$2.58	\$0.29	\$0.00	\$0.00	\$41.60	\$51.33
2nd 6 Months	\$21.10	\$65.00	\$9.28	\$8.98	\$0.99	\$0.00	\$2.58	\$0.29	\$0.00	\$0.00	\$43.22	\$53.77
3rd 6 Months	\$22.72	\$70.00	\$9.28	\$9.98	\$0.99	\$0.00	\$2.83	\$0.29	\$0.00	\$0.00	\$46.09	\$57.45
4th 6 Months	\$24.35	\$75.00	\$9.28	\$9.98	\$0.99	\$0.00	\$2.83	\$0.29	\$0.00	\$0.00	\$47.72	\$59.89
5th 6 Months	\$25.97	\$80.00	\$9.28	\$10.98	\$0.99	\$0.00	\$3.08	\$0.29	\$0.00	\$0.00	\$50.59	\$63.57
6th 6 Months	\$27.59	\$85.00	\$9.28	\$10.98	\$0.99	\$0.00	\$3.08	\$0.29	\$0.00	\$0.00	\$52.21	\$66.01
7th 6 Months	\$29.21	\$90.00	\$9.28	\$11.98	\$0.99	\$0.00	\$3.33	\$0.29	\$0.00	\$0.00	\$55.08	\$69.69
8th 6 Months	\$30.84	\$95.00	\$9.28	\$11.98	\$0.99	\$0.00	\$3.33	\$0.29	\$0.00	\$0.00	\$56.71	\$72.13

(*)Special Calculation Note :

Other is UBC National Fund.

Ratio :

3 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Gallia, Lawrence*, Meigs

Special Jurisdictional Note :

Lawrence County: East of State Route 775

Details :

Workmen employed on scaffold work, shafts, elevators, open structures or hazardous work, etc. shall be paid a rate of twenty-five cents (\$0.25) per hour above the regular scale of wages at 40 feet and five (\$0.05) per hour for every ten feet thereafter. CARPENTERS duties shall include but not limited to the milling, fashioning, joining, assembling, erecting, fastening, or dismantling of scaffolding and of material of wood, plastic, metal, fiber, cork and composition, and all other substitute materials. The handling, cleaning, erecting, installing and dismantling of machinery, equipment and all materials used by carpenters. The building and setting of all concrete forms and decking, and dismantling the same; the setting of templates for anchor bolts for structural members and for machinery, and the placing, leveling and bracing of these bolts; the making of all forms for bulkheads, figures, post, balusters and ornaments. The erection and installation of cooling towers assembled onsite. The building of all barricades and handling of rough lumber and drywall. The installation of all required blocking and all toilet accessories, including but not limited to grab bars, napkin dispensers and receptacles, mirrors and soap dispensers. The installation of metal studs and the welding of studs and other fastenings to receive material being applied by carpenters. The installation of all material used in drywall construction such as plasterboard, transite and other composition boards. The installation of carpet, artificial turf, wood and Resilient floors shall consist of and include the laying of all special designs of wood, wood block, wood composition, cork, linoleum, asphalt, mastic, plastic and rubber tile, whether nailed or laid in, or with linoleum paste or glue compositions. The installation of garage and overhead doors. The installation of fixtures, cabinets, shelving, racks, louvers, etc. The assembling and setting of all seats in theaters, halls, churches, schools, auditoriums, grandstands and other buildings. Our claim of jurisdiction, therefore, extends over the following subdivisions of the trade. Carpenters and Joiners; Bridge, Dock and Wharf Carpenters, Divers, Underpinners, Timbermen and Core Drillers; Shipwrights, Boat Builders, Ship Carpenters, Joiners and Caulkers, Cabinet Makers, Bench Hands, Stair Builders; Millmen; Wood and Resilient Floor Layers and Finishers; Carpet Layers; Shinglers; Siders; Insulators; Acoustic and Drywall Applicators; Shorers and House Movers; Loggers; Lumber and Sawmill Workers; Furniture Workers; Reed and Rattan Workers; Shingle Weavers; Casket and Coffin Makers; Box Makers; Railroad Carpenters; and Car Builders, regardless of material used; and all those engaged in the operation of woodworking or other machinery required in the fashioning, milling or manufacturing of products used in the trade, or engaged as helpers to any of the above divisions or subdivisions, and the handling, erecting and installing of material on any of the above divisions or subdivisions; burning welding, rigging and the use of any instrument or tool for layout work incidental to the trade. When the term "Carpenter" and "Joiner" is used, it shall mean all the subdivisions of the trade. PILEDRIIVER: Where piling is used in the construction and repair of all wharves, docks, piers, trestles, caissons, cofferdams, the erection of all sea walls and breakwaters. The placing of all walling, bumper guards of wood or metal. The framing, boring, drilling or burning of all holes in the same, all tie and hog rods in connection with Piledrivers work. The driving, bracing, plumbing, cutting-off and capping of all piling whether wood, steel sheeting, metal pipe piling, composite or concrete. The heading and splicing of wood piling and the making of woodsheets piling. The welding, cutting or burning of any metal and wood piling and shoring and underpinning in connection with Piledriver work. The loading and unloading of all piling and other material used in connection with Piledrivers work. The loading, unloading, erecting, framing, dismantling, moving and handling of all drivers, derrick, cranes and other piledriving equipment used in the work. Drilling in piling or drilled in caissons where a steel liner is used. All machinery used for handling spuds or anchors on floating equipment used in our work shall be operated by our members. Where swing lines or derricks are used, members shall be used as watchmen. All underwater and marine work on all bulkheads, wharves, docks, shipyards, caissons, piers, bridges, pipeline work, viaducts, marine cable and trestles, as well as salvage and reclamation work where divers are employed. All clamming work that is done by floating derricks.

Prevailing Wage Rate Skilled Crafts

Name of Union: Carpenter Floorlayer Zone I South

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Carpenter

Effective Date:
5/1/2025

Effective Date:
5/1/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Carpenter Floorlayer	\$30.92		\$8.89	\$11.48	\$0.89	\$0.00	\$4.99	\$0.00	\$0.00	\$0.00	\$57.17	\$72.63
Apprentice	BHR	Percent										
1st 3 Month Period	\$18.55	\$60.00	\$8.89	\$0.00	\$0.89	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$28.33	\$37.61
2nd 3 Month Period	\$18.55	\$60.00	\$8.89	\$0.00	\$0.89	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$28.33	\$37.61
2rd 6 Month Period	\$18.55	\$60.00	\$8.89	\$11.48	\$0.89	\$0.00	\$4.99	\$0.00	\$0.00	\$0.00	\$44.80	\$54.08
3rd 6 Month Period	\$20.10	\$65.00	\$8.89	\$11.48	\$0.89	\$0.00	\$4.99	\$0.00	\$0.00	\$0.00	\$46.35	\$56.40
4th 6 Month Period	\$23.19	\$75.00	\$8.89	\$11.48	\$0.89	\$0.00	\$4.99	\$0.00	\$0.00	\$0.00	\$49.44	\$61.04
5th 6 Month Period	\$24.74	\$80.00	\$8.89	\$11.48	\$0.89	\$0.00	\$4.99	\$0.00	\$0.00	\$0.00	\$50.99	\$63.35
6th 6 Month Period	\$26.28	\$85.00	\$8.89	\$11.48	\$0.89	\$0.00	\$4.99	\$0.00	\$0.00	\$0.00	\$52.53	\$65.67
7th 6 Month Period	\$27.83	\$90.00	\$8.89	\$11.48	\$0.89	\$0.00	\$4.99	\$0.00	\$0.00	\$0.00	\$54.08	\$67.99
8th 6 Month Period	\$29.37	\$95.00	\$8.89	\$11.48	\$0.89	\$0.00	\$4.99	\$0.00	\$0.00	\$0.00	\$55.62	\$70.31

(*)Special Calculation Note :

No special calculations for this skilled craft wage rate are required at this time.

Ratio :

1 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Defiance, Henry, Ottawa, Williams

Special Jurisdictional Note :

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Carpenter Floorlayer Zone II L

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Carpenter

Effective Date:
5/1/2025

Effective Date:
5/1/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Carpenter Floorlayer	\$30.92		\$8.89	\$11.48	\$0.89	\$0.00	\$4.99	\$0.00	\$0.00	\$0.00	\$57.17	\$72.63
Apprentice	BHR	Percent										
1st 3 Month Period	\$18.55	\$60.00	\$8.89	\$0.00	\$0.89	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$28.33	\$37.61
2nd 3 Month Period	\$18.55	\$60.00	\$8.89	\$0.00	\$0.89	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$28.33	\$37.61
2nd 6 Month Period	\$18.55	\$60.00	\$8.89	\$11.48	\$0.89	\$0.00	\$4.99	\$0.00	\$0.00	\$0.00	\$44.80	\$54.08
3rd 6 Month Period	\$20.10	\$65.00	\$8.89	\$11.48	\$0.89	\$0.00	\$4.99	\$0.00	\$0.00	\$0.00	\$46.35	\$56.40
4th 6 Month Period	\$23.19	\$75.00	\$8.89	\$11.48	\$0.89	\$0.00	\$4.99	\$0.00	\$0.00	\$0.00	\$49.44	\$61.04
5th 6 Month Period	\$24.74	\$80.00	\$8.89	\$11.48	\$0.89	\$0.00	\$4.99	\$0.00	\$0.00	\$0.00	\$50.99	\$63.35
6th 6 Month Period	\$26.28	\$85.00	\$8.89	\$11.48	\$0.89	\$0.00	\$4.99	\$0.00	\$0.00	\$0.00	\$52.53	\$65.67
7th 6 Month Period	\$27.83	\$90.00	\$8.89	\$11.48	\$0.89	\$0.00	\$4.99	\$0.00	\$0.00	\$0.00	\$54.08	\$67.99
8th 6 Month Period	\$29.37	\$95.00	\$8.89	\$11.48	\$0.89	\$0.00	\$4.99	\$0.00	\$0.00	\$0.00	\$55.62	\$70.31

(*)Special Calculation Note :

No special calculations for this skilled craft wage rate are required at this time.

Ratio :

1 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Allen, Auglaize, Crawford, Hardin, Mercer, Paulding, Putnam, Sandusky, Seneca, Van Wert, Wyandot

Special Jurisdictional Note :

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Carpenter Hev Hwy Zone NHH C2-H

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Carpenter

Effective Date:
6/18/2025

Effective Date:
6/18/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Carpenter	\$34.67		\$8.91	\$10.83	\$0.72	\$0.00	\$2.99	\$0.14	\$0.00	\$0.00	\$58.26	\$75.60
Apprentice	BHR	Percent										
1st 3 Months	\$20.80	\$60.00	\$8.91	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$29.71	\$40.11
2nd 3 Months	\$20.80	\$60.00	\$8.91	\$0.00	\$0.72	\$0.00	\$2.99	\$0.14	\$0.00	\$0.00	\$33.56	\$43.96
2nd 6 Months	\$22.54	\$65.00	\$8.91	\$0.00	\$0.72	\$0.00	\$2.99	\$0.14	\$0.00	\$0.00	\$35.30	\$46.56
3rd 6 Months	\$24.27	\$70.00	\$8.91	\$0.00	\$0.72	\$0.00	\$2.99	\$0.14	\$0.00	\$0.00	\$37.03	\$49.16
4th 6 Months	\$26.00	\$75.00	\$8.91	\$0.00	\$0.72	\$0.00	\$2.99	\$0.14	\$0.00	\$0.00	\$38.76	\$51.76
5th 6 Months	\$27.74	\$80.00	\$8.91	\$8.66	\$0.72	\$0.00	\$2.99	\$0.14	\$0.00	\$0.00	\$49.16	\$63.02
6th 6 Months	\$29.47	\$85.00	\$8.91	\$9.21	\$0.72	\$0.00	\$2.99	\$0.14	\$0.00	\$0.00	\$51.44	\$66.17
7th 6 Months	\$31.20	\$90.00	\$8.91	\$9.75	\$0.72	\$0.00	\$2.99	\$0.14	\$0.00	\$0.00	\$53.71	\$69.31
8th 6 Months	\$32.94	\$95.00	\$8.91	\$10.29	\$0.72	\$0.00	\$2.99	\$0.14	\$0.00	\$0.00	\$55.99	\$72.45

(*)Special Calculation Note :

Other: Training

Ratio :

1 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Ashland, Huron, Richland

Special Jurisdictional Note :

Details :

Any construction work as performed within the definitions listed here below, all of which, taken together are "Heavy-Highway Construction" work: "HIGHWAY CONSTRUCTION" work is defined as work performed to provide a facility to accommodate vehicular or pedestrian traffic and includes, but is not limited to, the construction of all streets, roads, expressways, turnpikes, bridges, drainage structures, grade separations, parking lots, rest areas, alleys, sidewalks, guardrails, fences, and sound barriers, but shall not include construction of buildings. "AIRPORT CONSTRUCTION" work is defined as including site preparation, grading, paving, drainage, fences, sidewalks, driveways, parking areas and similar work incidental to the construction of airfields but shall not include the construction of buildings. "HEAVY CONSTRUCTION" work is defined as including, but not limited to grade separations, foundations (does not include building foundations), abutments, retaining walls, shafts, tunnels, subways, elevators, drainage projects, flood control projects, reclamation projects, reservoirs, water supply projects, water development projects, hydro-electric development, utility transmission lines, including right-of-way clearing, locks, dams, dikes, levees, revetments, channels, channel cutoffs, intakes, dredging projects, jetties, breakwater, docks, harbors; and all municipal and utility construction except construction classified as building construction. "RAILROAD CONSTRUCTION" work is defined as including, grading, drainage, placing of rails, crossties, ballast and the construction of bridges, and other incidentals for railroads, street railways construction projects and rapid transit system projects, but shall not include the construction of buildings. "SEWER WATERWORKS AND UTILITY CONSTRUCTION" work is defined as including construction of all storm sewers, sanitary sewers, supplying and distributing waterlines, gas lines, telephone and television conduit, underground electrical lines, and similar utility construction. Main waterline and trunk sewers connecting water works and/or sewage disposal plants are included within this definition. "SUPPORTIVE EXCAVATION AND DEEP FOUNDATIONS" work is all driven and drilled foundations within the building site. "POWER PLANT SITE" work is defined as all work which is inside the property line, but outside the actual building construction. Such work shall include, but is not limited to, the grading and installation of sewer lines, drainage lines, gas lines, telephone and television conduit, underground electrical lines and similar utility construction, parking lots, bridges, roads, streets, sidewalks, reservoirs, ash pits, storage tanks, ramps and other such construction work performed on the work site, but shall not include the actual excavation for the buildings, foundations or footers or construction of the buildings. "POLLUTION CONTROL, SEWAGE PLANT, WASTE PLANT AND WATER TREATMENT FACILITIES CONSTRUCTION" WORK shall be all work in construction of pumping stations, waste and sewage disposal plants, incinerator plants, water treatment plants, filtration plants, solid waste disposal and similar pollution control facilities. "SOLAR & WIND FARM" WORK is considered "HEAVY CONSTRUCTION" and includes all work in the construction of solar fields/farms and wind fields/farms (not installations on buildings).

Prevailing Wage Rate Skilled Crafts

Name of Union: Carpenter Insulation Zone NEO 1B

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Carpenter

Effective Date:
6/18/2025

Effective Date:
6/18/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Carpenter Insulation	\$30.02		\$8.92	\$10.98	\$0.72	\$0.00	\$4.30	\$0.14	\$0.00	\$0.00	\$55.08	\$70.09
Apprentice	BHR	Percent										
1st 3 months	\$18.01	\$60.00	\$8.92	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$26.93	\$35.94
2nd 3 months	\$18.01	\$60.00	\$8.92	\$0.00	\$0.72	\$0.00	\$4.30	\$0.14	\$0.00	\$0.00	\$32.09	\$41.10
2nd 6 months	\$19.51	\$65.00	\$8.92	\$0.00	\$0.72	\$0.00	\$4.30	\$0.14	\$0.00	\$0.00	\$33.59	\$43.35
3rd 6 months	\$21.01	\$70.00	\$8.92	\$0.00	\$0.72	\$0.00	\$4.30	\$0.14	\$0.00	\$0.00	\$35.09	\$45.60
4th 6 months	\$22.52	\$75.00	\$8.92	\$0.00	\$0.72	\$0.00	\$4.30	\$0.14	\$0.00	\$0.00	\$36.60	\$47.85
5th 6 months	\$24.02	\$80.00	\$8.92	\$8.78	\$0.72	\$0.00	\$4.30	\$0.14	\$0.00	\$0.00	\$46.88	\$58.88
6th 6 months	\$25.52	\$85.00	\$8.92	\$9.33	\$0.72	\$0.00	\$4.30	\$0.14	\$0.00	\$0.00	\$48.93	\$61.69
7th 6 months	\$27.02	\$90.00	\$8.92	\$9.88	\$0.72	\$0.00	\$4.30	\$0.14	\$0.00	\$0.00	\$50.98	\$64.49
8th 6 months	\$28.52	\$95.00	\$8.92	\$10.43	\$0.72	\$0.00	\$4.30	\$0.14	\$0.00	\$0.00	\$53.03	\$67.29

(*)Special Calculation Note :

*Other is Training

Ratio :

1 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Medina, Portage, Summit

Special Jurisdictional Note :

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Carpenter Insulation Zone NEO 3

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Carpenter

Effective Date:
6/18/2025

Effective Date:
6/18/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Carpenter Insulation	\$26.23		\$8.98	\$10.68	\$0.72	\$0.00	\$4.05	\$0.45	\$0.00	\$0.00	\$51.11	\$64.23
Apprentice	BHR	Percent										
1st 3 months	\$15.74	\$60.00	\$8.98	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$24.72	\$32.59
2nd 3 months	\$15.74	\$60.00	\$8.98	\$0.00	\$0.72	\$0.00	\$4.05	\$0.45	\$0.00	\$0.00	\$29.94	\$37.81
2nd 6 months	\$17.05	\$65.00	\$8.98	\$0.00	\$0.72	\$0.00	\$4.05	\$0.45	\$0.00	\$0.00	\$31.25	\$39.77
3rd 6 months	\$18.36	\$70.00	\$8.98	\$0.00	\$0.72	\$0.00	\$4.05	\$0.45	\$0.00	\$0.00	\$32.56	\$41.74
4th 6 months	\$19.68	\$75.02	\$8.98	\$0.00	\$0.72	\$0.00	\$4.05	\$0.45	\$0.00	\$0.00	\$33.88	\$43.72
5th 6 months	\$20.98	\$80.00	\$8.98	\$8.54	\$0.72	\$0.00	\$4.05	\$0.45	\$0.00	\$0.00	\$43.72	\$54.22
6th 6 months	\$22.30	\$85.00	\$8.98	\$9.08	\$0.72	\$0.00	\$4.05	\$0.45	\$0.00	\$0.00	\$45.58	\$56.72
7th 6 months	\$23.61	\$90.00	\$8.98	\$9.61	\$0.72	\$0.00	\$4.05	\$0.45	\$0.00	\$0.00	\$47.42	\$59.22
8th 6 months	\$24.92	\$95.00	\$8.98	\$10.15	\$0.72	\$0.00	\$4.05	\$0.45	\$0.00	\$0.00	\$49.27	\$61.73

(*)Special Calculation Note :

OTHER IS :SUPPLEMENTAL UNEMPLOYMENT BENEFITS and Training

Ratio :

1 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Mahoning, Trumbull

Special Jurisdictional Note :

Details :

Rates are for Commercial, Industrial & Road

Prevailing Wage Rate Skilled Crafts

Name of Union: Carpenter Millwright & Pile Driver Zone I South

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Carpenter

Effective Date:
5/1/2025

Effective Date:
5/1/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Carpenter Millwright Pile Driver	\$38.02		\$8.88	\$12.75	\$0.91	\$0.00	\$6.26	\$0.00	\$0.00	\$0.00	\$66.82	\$85.83
Apprentice	BHR	Percent										
1st 6 months	\$22.81	\$60.00	\$8.88	\$0.00	\$0.91	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$32.60	\$44.01
2nd 6 months	\$22.81	\$60.00	\$8.88	\$12.75	\$0.91	\$0.00	\$6.26	\$0.00	\$0.00	\$0.00	\$51.61	\$63.02
3rd 6 months	\$26.61	\$70.00	\$8.88	\$12.75	\$0.91	\$0.00	\$6.26	\$0.00	\$0.00	\$0.00	\$55.41	\$68.72
4th 6 months	\$28.52	\$75.00	\$8.88	\$12.75	\$0.91	\$0.00	\$6.26	\$0.00	\$0.00	\$0.00	\$57.32	\$71.57
5th 6 months	\$30.42	\$80.00	\$8.88	\$12.75	\$0.91	\$0.00	\$6.26	\$0.00	\$0.00	\$0.00	\$59.22	\$74.42
6th 6 months	\$32.32	\$85.00	\$8.88	\$12.75	\$0.91	\$0.00	\$6.26	\$0.00	\$0.00	\$0.00	\$61.12	\$77.28
7th 6 months	\$34.22	\$90.00	\$8.88	\$12.75	\$0.91	\$0.00	\$6.26	\$0.00	\$0.00	\$0.00	\$63.02	\$80.13
8th 6 months	\$36.12	\$95.00	\$8.88	\$12.75	\$0.91	\$0.00	\$6.26	\$0.00	\$0.00	\$0.00	\$64.92	\$82.98

(*)Special Calculation Note :

No special calculations for this skilled craft wage rate are required at this time.

Ratio :

3 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Crawford, Paulding, Sandusky, Seneca

Special Jurisdictional Note :

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Carpenter Millwright Local 1090 SC South Point District A

Type of Rate: Commercial

Change #:
LCN01-2024ib

Craft:
Carpenter

Effective Date:
6/12/2024

Effective Date:
6/12/2024

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Carpenter Millwright	\$37.78		\$8.37	\$13.59	\$0.88	\$0.00	\$4.87	\$0.28	\$0.00	\$0.00	\$65.77	\$84.66
Apprentice	BHR	Percent										
1st 6 months	\$22.67	\$60.00	\$8.37	\$13.59	\$0.88	\$0.00	\$4.87	\$0.28	\$0.00	\$0.00	\$50.66	\$61.99
2nd 6 months	\$24.56	\$65.02	\$8.37	\$13.59	\$0.88	\$0.00	\$4.87	\$0.28	\$0.00	\$0.00	\$52.55	\$64.84
3rd 6 months	\$26.45	\$70.00	\$8.37	\$13.59	\$0.88	\$0.00	\$4.87	\$0.28	\$0.00	\$0.00	\$54.44	\$67.66
4th 6 months	\$28.34	\$75.00	\$8.37	\$13.59	\$0.88	\$0.00	\$4.87	\$0.28	\$0.00	\$0.00	\$56.33	\$70.49
5th 6 months	\$30.22	\$80.00	\$8.37	\$13.59	\$0.88	\$0.00	\$4.87	\$0.28	\$0.00	\$0.00	\$58.21	\$73.33
6th 6 months	\$32.11	\$85.00	\$8.37	\$13.59	\$0.88	\$0.00	\$4.87	\$0.28	\$0.00	\$0.00	\$60.10	\$76.16
7th 6 months	\$34.00	\$90.00	\$8.37	\$13.59	\$0.88	\$0.00	\$4.87	\$0.28	\$0.00	\$0.00	\$61.99	\$78.99
8th 6 months	\$35.89	\$95.00	\$8.37	\$13.59	\$0.88	\$0.00	\$4.87	\$0.28	\$0.00	\$0.00	\$63.88	\$81.83

(*)Special Calculation Note :

Other is UBC National Fund.

Ratio :

3 Journeymen to 1 Apprentice If certain projects warrant a larger percentage of apprentices, it will be agreed to increase the ratio of apprentices to journeymen, but Not to exceed (1) Apprentice to (4) Journeymen.

Jurisdiction (* denotes special jurisdictional note) :

Adams, Fayette, Gallia, Highland, Hocking, Jackson, Lawrence, Meigs, Pike, Ross, Scioto, Vinton

Special Jurisdictional Note :

Details :

The term "Millwright and Machine Erectors" jurisdiction shall mean the unloading, hoisting, rigging, skidding, moving, dismantling, aligning, erecting, assembling, repairing, maintenance and adjusting of all structures, processing areas either under cover, underground or elsewhere, required to process material, handle, manufacture or service, be it powered or receiving power manually, by steam, gas, electricity, gasoline, diesel, nuclear, solar, water, air or chemically, and in industries such as and including, which are identified for the purpose of description, but not limited to, the following: woodworking plants; canning industries; steel mills; coffee roasting plants; paper and pulp; cellophane; stone crushing; gravel and sand washing and handling; refineries; grain storage and handling; asphalt plants; sewage disposal; water plants; laundries; bakeries; mixing plants; can, bottle and bag packing plants; textile mills; paint mills; breweries; milk processing plants; power plants; aluminum processing or manufacturing plants; and amusement and entertainment fields. The installation of mechanical equipment in atomic energy plants; installation of reactors in power plants; installation of control rods and equipment in reactors; and installation of mechanical equipment in rocket missile bases, launchers, launching gantry, floating bases, hydraulic escape doors and any and all component parts thereto, either assembled, semi-assembled or disassembled. The installation of, but not limited to, the following: setting-up of all engines, motors, generators, air compressors, fans, pumps, scales, hoppers, conveyors of all types, sizes and their supports; escalators; man lifts; moving sidewalks; hosts; dumb waiters; all types of feeding machinery; amusement devices; mechanical pin setters and spotters in bowling alleys; refrigeration equipment; and the installation of all types of equipment necessary and required to process material either in the manufacturing or servicing. The handling and installation of pulleys, gears, sheaves, fly wheels, air and vacuum drives, worm drives and gear drivers directly or indirectly coupled to motors, belts, chains, screws, legs, boots, guards, booth tanks, all bin valves, turn heads and indicators, shafting, bearings, cable sprockets cutting all key seats in new and old work, troughs, chippers, filters, calendars, rolls, winders, rewinders, slitters, cutters, wrapping machines, blowers, forging machines, rams, hydraulic or otherwise, planning, extruder, ball, dust collectors, equipment in meat packing plants, splicing or ropes and cables. The laying-out, fabrication and installation of protection equipment including machinery guards, making and setting of templates for machinery, fabrication of bolts, nuts, pans, dripping of holes for any equipment which the Millwrights install regardless of materials; all welding and burning regardless of type, fabrication of all lines, hose or tubing used in lubricating machinery installed by Millwrights; grinding, cleaning, servicing and any machine work necessary for any part of any equipment installed by the Millwrights; and the break-in and trail run of any equipment or machinery installed by the Millwrights. It is agreed the Millwrights shall use the layout tools and optic equipment necessary to perform their work.

Prevailing Wage Rate Skilled Crafts

Name of Union: Cement Mason Local 132 Hev Hwy (Portsmouth)

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Cement Mason

Effective Date:
5/1/2025

Effective Date:
5/1/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Cement Mason	\$37.44		\$9.00	\$7.65	\$0.75	\$0.00	\$2.25	\$0.07	\$0.00	\$0.00	\$57.16	\$75.88
Apprentice	BHR	Percent										
1st Year	\$26.21	\$70.00	\$9.00	\$7.65	\$0.75	\$0.00	\$2.25	\$0.07	\$0.00	\$0.00	\$45.93	\$59.03
2nd Year	\$29.95	\$80.00	\$9.00	\$7.65	\$0.75	\$0.00	\$2.25	\$0.07	\$0.00	\$0.00	\$49.67	\$64.65
3rd Year	\$33.70	\$90.00	\$9.00	\$7.65	\$0.75	\$0.00	\$2.25	\$0.07	\$0.00	\$0.00	\$53.42	\$70.26

(*)Special Calculation Note :

Other: International Training Fund

Ratio :

1 Journeyman to 1 Apprentice 2 Journeymen to 1 Apprentice thereafter

Jurisdiction (* denotes special jurisdictional note) :

Adams, Gallia, Jackson, Lawrence, Pike, Scioto

Special Jurisdictional Note :

Details :

Highway Construction, Sewer, Waterworks And Utility Construction, Industrial & Building Site, Heavy Construction, Airport Construction Or Railroad Construction Work, Power Plant, Tunnels, Amusement Park, Athletic Stadium Site Work, Pollution Control, Sewer Plant, Waste & Water Plant, Water Treatment Facilities Construction.

Prevailing Wage Rate Skilled Crafts

Name of Union: Cement Mason Local 404 Hev Hwy

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Cement Mason

Effective Date:
5/1/2025

Effective Date:
5/1/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Cement Mason	\$36.29		\$9.20	\$7.85	\$0.75	\$0.00	\$3.00	\$0.07	\$0.00	\$0.00	\$57.16	\$75.31
Apprentice	BHR	Percent										
1st Year	\$25.40	\$70.00	\$9.20	\$7.85	\$0.75	\$0.00	\$3.00	\$0.07	\$0.00	\$0.00	\$46.27	\$58.97
2nd Year	\$29.03	\$80.00	\$9.20	\$7.85	\$0.75	\$0.00	\$3.00	\$0.07	\$0.00	\$0.00	\$49.90	\$64.42
3rd Year	\$32.66	\$90.00	\$9.20	\$7.85	\$0.75	\$0.00	\$3.00	\$0.07	\$0.00	\$0.00	\$53.53	\$69.86
4th Year	\$34.48	\$95.00	\$9.20	\$7.85	\$0.75	\$0.00	\$3.00	\$0.07	\$0.00	\$0.00	\$55.35	\$72.58

(*)Special Calculation Note :

Other: International Training Fund

Ratio :

1 Journeyman to 1 Apprentice 2 Journeymen to 1 Apprentice thereafter

Jurisdiction (* denotes special jurisdictional note) :

Ashtabula, Cuyahoga, Geauga, Lake, Lorain

Special Jurisdictional Note :

Details :

Highway Construction, Sewer, Waterworks And Utility Construction, Industrial & Building Site, Heavy Construction, Airport Construction Or Railroad Construction Work, Power Plant, Tunnels, Amusement Park, Athletic Stadium Site Work, Pollution Control, Sewer Plant, Waste & Water Plant, Water Treatment Facilities Construction.

Prevailing Wage Rate Skilled Crafts

Name of Union: Electrical Local 1105 Inside

Type of Rate: Commercial

Change #:
LCN01-2023ib

Craft:
Electrical

Effective Date:
7/5/2023

Effective Date:
7/5/2023

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Electrician	\$36.45		\$10.50	\$8.36	\$1.00	\$0.00	\$4.10	\$0.00	\$0.00	\$0.00	\$60.41	\$78.64
Over 50 Feet	\$45.56		\$10.50	\$8.64	\$1.00	\$0.00	\$4.10	\$0.00	\$0.00	\$0.00	\$69.80	\$92.58
Over 100 feet	\$54.66		\$10.50	\$8.91	\$1.00	\$0.00	\$4.10	\$0.00	\$0.00	\$0.00	\$79.17	\$106.5
1st period CW 0-2000 hours	\$13.13		\$6.51	\$0.39	\$0.76	\$0.00	\$0.38	\$0.00	\$0.00	\$0.00	\$21.17	\$27.74
2nd period CW 2001-4000 hours	\$14.00		\$6.51	\$0.42	\$0.76	\$0.00	\$0.41	\$0.00	\$0.00	\$0.00	\$22.10	\$29.10
3rd period CW 4001-6000 hours	\$14.88		\$6.51	\$0.45	\$0.76	\$0.00	\$0.43	\$0.00	\$0.00	\$0.00	\$23.03	\$30.47
4th period CW 6001-8000 hours	\$16.63		\$6.51	\$0.50	\$0.76	\$0.00	\$0.48	\$0.00	\$0.00	\$0.00	\$24.88	\$33.20
1st Level CE 8001-10000 hours	\$18.38		\$6.51	\$0.55	\$0.76	\$0.00	\$0.54	\$0.00	\$0.00	\$0.00	\$26.74	\$35.93
2nd Level CE 10001-12000 hours	\$20.13		\$6.51	\$0.60	\$0.76	\$0.00	\$0.59	\$0.00	\$0.00	\$0.00	\$28.59	\$38.66
3rd Level CE 12001-14000 hours	\$25.38		\$6.51	\$0.76	\$0.76	\$0.00	\$0.74	\$0.00	\$0.00	\$0.00	\$34.15	\$46.84
Apprentice	BHR	Percent										
1st period 0-1000	\$14.58	\$40.00	\$10.50	\$0.44	\$1.00	\$0.00	\$1.95	\$0.00	\$0.00	\$0.00	\$28.47	\$35.76
2nd period 1001-2000	\$16.40	\$45.00	\$10.50	\$0.49	\$1.00	\$0.00	\$1.95	\$0.00	\$0.00	\$0.00	\$30.34	\$38.54
3rd period 2001-3500	\$20.05	\$55.00	\$10.50	\$4.60	\$1.00	\$0.00	\$1.95	\$0.00	\$0.00	\$0.00	\$38.10	\$48.12
4th period 3501-5000	\$23.69	\$65.00	\$10.50	\$5.44	\$1.00	\$0.00	\$1.95	\$0.00	\$0.00	\$0.00	\$42.58	\$54.43
5th period 5001-6500	\$25.52	\$70.02	\$10.50	\$5.86	\$1.00	\$0.00	\$1.95	\$0.00	\$0.00	\$0.00	\$44.83	\$57.59
6th period 6501-8000	\$29.16	\$80.00	\$10.50	\$6.69	\$1.00	\$0.00	\$1.95	\$0.00	\$0.00	\$0.00	\$49.30	\$63.88

(*)Special Calculation Note :

On ALL other jobs sites, CW/CE's CAN only be employed after an APPRENTICE IS EMPLOYED on the job site.

Ratio :

1 to 3 Journeymen to 2 Apprentices 4 to 6 Journeymen to 4 Apprentices

Jurisdiction (* denotes special jurisdictional note) :

Coshocton, Guernsey, Knox*, Licking, Muskingum, Perry, Tuscarawas*

Special Jurisdictional Note :

In Knox County the following townships: Butler, Clay, College, Harrison, Hilliard, Jackson, Milford, Miller, Morgan and Pleasant. In Tuscarawas County the following townships: Auburn, Bucks, Clay, Jefferson, Oxford, Perry, Rush, Salem, Washington and York

Details :

The Construction Wireman/Construction Electrician Classifications are applicable to all work except industrial facilities, manufacturing facilities, colleges and universities within the geographical jurisdiction of Local Union No. 1105.

Prevailing Wage Rate Skilled Crafts

Name of Union: Electrical Local 141 Inside Light Industrial

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Electrical

Effective Date:
6/4/2025

Effective Date:
6/4/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Electrician	\$35.33		\$11.30	\$10.00	\$0.25	\$8.00	\$0.00	\$1.06	\$0.00	\$0.90	\$66.84	\$84.51
Apprentice	BHR	Percent										
0-2000 hrs	\$17.67	\$50.02	\$12.20	\$5.00	\$0.25	\$4.00	\$0.00	\$0.53	\$0.00	\$0.00	\$39.65	\$48.49
2001-3500 hrs	\$17.67	\$50.02	\$12.20	\$5.00	\$0.25	\$4.00	\$0.00	\$0.53	\$0.00	\$0.00	\$39.65	\$48.49
3501-5000 hrs	\$19.43	\$55.00	\$12.20	\$5.50	\$0.25	\$4.40	\$0.00	\$0.58	\$0.00	\$0.00	\$42.36	\$52.08
5001-6500 hrs	\$22.96	\$65.00	\$12.20	\$6.50	\$0.25	\$5.20	\$0.00	\$0.69	\$0.00	\$0.00	\$47.80	\$59.29
6501-7500 hrs	\$28.26	\$80.00	\$12.20	\$8.00	\$0.25	\$6.40	\$0.00	\$0.85	\$0.00	\$0.00	\$55.96	\$70.10
7500-8000 hrs	\$30.03	\$85.00	\$12.20	\$8.50	\$0.25	\$6.80	\$0.00	\$0.90	\$0.00	\$0.00	\$58.68	\$73.70

(*)Special Calculation Note :

Other: National Electrical Benefit Fund Misc: Supplemental Health Fund

Ratio :

Each job site shall be allowed a ratio of (2) apprentices for every (3) Journeyman of fraction thereof as illustrated below: 1-3 Journeyman to 2 Apprentices 4-6 Journeyman to 4 Apprentices 7-9 Journeyman to 6 Apprentices First person assigned to any job site shall be a Journeyman Wireman.

Jurisdiction (* denotes special jurisdictional note) :

Belmont

Special Jurisdictional Note :

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Electrical Local 141 Voice Data Video

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Electrical Voice Data Video

Effective Date:
6/4/2025

Effective Date:
6/4/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Electrical Installer Technician	\$27.35		\$10.25	\$8.00	\$0.31	\$6.80	\$0.00	\$0.82	\$0.00	\$0.90	\$54.43	\$68.11
Cable Puller	\$14.22		\$10.25	\$4.16	\$0.31	\$3.54	\$0.00	\$0.43	\$0.00	\$0.90	\$33.81	\$40.92
Apprentice	BHR	Percent										
1st 750 hrs	\$15.04	\$55.00	\$11.15	\$4.40	\$0.31	\$3.74	\$0.00	\$0.45	\$0.00	\$0.00	\$35.09	\$42.61
2nd 750 hrs	\$17.78	\$65.00	\$11.15	\$5.20	\$0.31	\$4.42	\$0.00	\$0.53	\$0.00	\$0.00	\$39.39	\$48.28
3rd 750 hrs	\$20.51	\$75.00	\$11.15	\$6.00	\$0.31	\$5.10	\$0.00	\$0.62	\$0.00	\$0.00	\$43.69	\$53.95
4th 750 hrs	\$21.88	\$80.00	\$11.15	\$6.40	\$0.31	\$5.44	\$0.00	\$0.66	\$0.00	\$0.00	\$45.84	\$56.78
5th 750 hrs	\$23.25	\$85.00	\$11.15	\$6.80	\$0.31	\$5.78	\$0.00	\$0.70	\$0.00	\$0.00	\$47.99	\$59.61
6th 750 hrs	\$24.62	\$90.00	\$11.15	\$7.20	\$0.31	\$6.12	\$0.00	\$0.74	\$0.00	\$0.00	\$50.14	\$62.44

(*)Special Calculation Note :

Ratio :

1 Journeyman to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Belmont

Special Jurisdictional Note :

Details :

The following work is EXCLUDED from Teledata Technician work scope: The installation of computer systems in industrial applications such as assembly lines, robotics, computer controller manufacturing systems. The installation of conduit and/or raceways shall be installed by Inside Wireman. On sites where there is no Inside Wireman employed, the Teledata Technician may install raceway, or conduit not greater than 10 feet. Fire Alarm work is excluded on all new construction sites or wherever the fire alarm system is installed in conduit. All HVAC control work. Cable Pullers:are for the installation of cable from one termination point to another.

Prevailing Wage Rate Skilled Crafts

Name of Union: Electrical Local 212 Inside Lt Commercial South West

Type of Rate: Commercial

Change #:
LCN01-2023ib

Craft:
Electrical

Effective Date:
1/1/2024

Effective Date:
1/1/2024

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Electrician	\$34.41		\$7.60	\$10.03	\$0.62	\$0.00	\$2.65	\$0.65	\$0.00	\$0.00	\$55.96	\$73.17
CE-3 12,001-14,000 Hrs	\$27.05		\$6.67	\$0.81	\$0.88	\$0.00	\$0.81	\$0.00	\$0.00	\$0.00	\$36.22	\$49.75
CE-2 10,001-12,000 Hrs	\$21.64		\$6.67	\$0.65	\$0.88	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$30.49	\$41.31
CE-1 8,001-10,000 Hrs	\$19.83		\$6.67	\$0.59	\$0.88	\$0.00	\$0.59	\$0.00	\$0.00	\$0.00	\$28.56	\$38.48
CW-4 6,001-8,000 Hrs	\$18.03		\$6.67	\$0.54	\$0.88	\$0.00	\$0.54	\$0.00	\$0.00	\$0.00	\$26.66	\$35.68
CW-3 4,001-6,000 Hrs	\$16.23		\$6.67	\$0.49	\$0.88	\$0.00	\$0.49	\$0.00	\$0.00	\$0.00	\$24.76	\$32.88
CW-2 2,001-4,000 Hrs	\$15.33		\$6.67	\$0.46	\$0.88	\$0.00	\$0.46	\$0.00	\$0.00	\$0.00	\$23.80	\$31.47
CW-1 0-2,000 Hrs	\$14.42		\$6.67	\$0.43	\$0.88	\$0.00	\$0.43	\$0.00	\$0.00	\$0.00	\$22.83	\$30.04
Apprentice	BHR	Percent										
1st period 0-1000 hrs	\$15.48	\$45.00	\$7.60	\$0.46	\$0.28	\$0.00	\$0.35	\$0.00	\$0.00	\$0.00	\$24.17	\$31.92
2nd period 1000-2000 hrs	\$16.52	\$48.00	\$7.60	\$0.50	\$0.30	\$0.00	\$0.35	\$0.00	\$0.00	\$0.00	\$25.27	\$33.53
3rd period 2000-3500 hrs	\$17.21	\$50.02	\$7.60	\$5.02	\$0.31	\$0.00	\$1.60	\$0.65	\$0.00	\$0.00	\$32.39	\$41.00
4th period 3500-5000 hrs	\$17.89	\$52.00	\$7.60	\$5.22	\$0.32	\$0.00	\$1.65	\$0.65	\$0.00	\$0.00	\$33.33	\$42.28
5th period 5000-6500 hrs	\$19.61	\$57.00	\$7.60	\$5.72	\$0.35	\$0.00	\$1.70	\$0.65	\$0.00	\$0.00	\$35.63	\$45.44
6th period 6500-8000 hrs	\$23.40	\$68.00	\$7.60	\$6.82	\$0.42	\$0.00	\$1.95	\$0.65	\$0.00	\$0.00	\$40.84	\$52.54

(*)Special Calculation Note :

Other is; Supplemental Unemployment

Ratio :

Each Job site shall be allowed a ratio of two (2) Apprentices to every three (3) Journeyman Wireman. 1 to 3 Journeyman to 2 Apprentices 4 to 6 Journeyman to 4 Apprentices Etc. Construction Electrician and Construction Wireman Ratio There shall be a minimum ratio of one inside Journeyman to every (4) employees of different classification per jobsite. An inside Journeyman Wireman is required on the project as the fifth (5th) worker or when apprentices are used.

Jurisdiction (* denotes special jurisdictional note) :

Brown, Clermont, Hamilton

Special Jurisdictional Note :

The scope of work for the light commercial agreement shall apply to the following facilities not to exceed 200,000 square feet; office buildings, shopping centers, auto sales agencies and garages, churches, funeral homes, nursing homes, hotels, retail and wholesale facilities, small stand-alone manufacturing facilities when free standing and not part of a larger facility (not to exceed 50,000 square fee), solar projects (500 panels or less) unless otherwise covered under the agreement, lighting retrofits (when not associated with remodels involving branch re-circuiting) lighting retrofits shall be defined as the changing of lamps and ballasts in existing light fixtures and shall also include the one for one replacement of existing fixtures, warehouses, gas stations, food service centers, restaurants, entertainment facilities, hospitals, clinics, motels, residential buildings.

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Electrical Local 306 Inside

Type of Rate: Commercial

Change #:
LCN01-2024ib

Craft:
Electrical

Effective Date:
6/12/2024

Effective Date:
6/12/2024

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Electrician	\$42.55		\$11.70	\$1.28	\$0.96	\$0.00	\$9.25	\$0.00	\$0.00	\$0.00	\$65.74	\$87.02
Cable Splicer	\$46.81		\$11.70	\$1.40	\$1.05	\$0.00	\$9.25	\$0.00	\$0.00	\$0.00	\$70.21	\$93.62
Apprentice	BHR	Percent										
1st period	\$17.02	\$40.00	\$11.70	\$0.51	\$0.38	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$29.61	\$38.12
2nd period	\$19.15	\$45.00	\$11.70	\$0.57	\$0.43	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$31.85	\$41.42
3rd period	\$21.28	\$50.02	\$11.70	\$0.64	\$0.48	\$0.00	\$4.63	\$0.00	\$0.00	\$0.00	\$38.73	\$49.38
4th period	\$25.53	\$60.00	\$11.70	\$0.77	\$0.57	\$0.00	\$5.55	\$0.00	\$0.00	\$0.00	\$44.12	\$56.89
5th period	\$29.79	\$70.02	\$11.70	\$0.89	\$0.67	\$0.00	\$6.48	\$0.00	\$0.00	\$0.00	\$49.53	\$64.43
6th period	\$34.04	\$80.00	\$11.70	\$1.02	\$0.77	\$0.00	\$7.40	\$0.00	\$0.00	\$0.00	\$54.93	\$71.95

(*)Special Calculation Note :

Ratio :

1 - 3 Journeymen to 2 Apprentice 4 - 6 Journeymen to 4 Apprentice 7 - 9 Journeymen to 6 Apprentice 10-12 Journeymen to 8 Apprentice 13-15 Journeymen to 10 Apprentice First person assigned to a job site shall be a Journeyman Wireman

Jurisdiction (* denotes special jurisdictional note) :

Medina*, Portage*, Summit, Wayne*

Special Jurisdictional Note :

Medina County the following townships are included: (Brunswick, Chatham, Granger, Guilford, Harrisville, Hinckley, Homer, Lafayette, Medina, Montville, Sharon, Spencer, Wadsworth, Westfield and York). Portage County the following townships are included: (Atwater, Aurora, Brimfield, Deerfield, Franklin, Mantua, Randolph, Ravenna, Rootstown, Shalersville, Streetsboro and Suffield). Wayne County the following townships are included: (Baughman, Cannaan, Chester, Chippewa, Congress, Green, Milton, and Wayne).

Details :

This rate covers both Commercial and Industrial. High work a premium rate of shall be paid at (3%) per hour for all work performed over (30') free-fall and for work in a mine. Line work is excluded.

Prevailing Wage Rate Skilled Crafts

Name of Union: Electrical Local 683 Inside Lt Commercial South West

Type of Rate: Commercial

Change #:
LCR01-2025ib

Craft:
Electrical

Effective Date:
2/12/2025

Effective Date:
2/12/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Electrician	\$40.50		\$11.55	\$8.49	\$1.16	\$0.00	\$4.00	\$0.00	\$0.00	\$0.00	\$65.70	\$85.95
Welding	\$41.50		\$11.55	\$8.52	\$1.16	\$0.00	\$4.00	\$0.00	\$0.00	\$0.00	\$66.73	\$87.48
Medium Voltage Splicing	\$41.50		\$11.55	\$8.52	\$1.16	\$0.00	\$4.00	\$0.00	\$0.00	\$0.00	\$66.73	\$87.48
Over 100 feet	\$60.75		\$11.55	\$9.09	\$1.16	\$0.00	\$4.00	\$0.00	\$0.00	\$0.00	\$86.55	\$116.9
Level 1 CW 0 to 2000 hours	\$15.29		\$6.83	\$0.46	\$0.92	\$0.00	\$0.46	\$0.10	\$0.00	\$0.00	\$24.06	\$31.71
Level 2 CW 2001 to 4000 hours	\$16.25		\$6.83	\$0.49	\$0.92	\$0.00	\$0.49	\$0.10	\$0.00	\$0.00	\$25.08	\$33.21
Level 3 CW 4001 to 6000 hours	\$17.20		\$6.83	\$0.52	\$0.92	\$0.00	\$0.52	\$0.10	\$0.00	\$0.00	\$26.09	\$34.69
Level 4 CW 6001 to 8000 hours	\$19.12		\$6.83	\$0.57	\$0.92	\$0.00	\$0.57	\$0.10	\$0.00	\$0.00	\$28.11	\$37.67
Level 1 CE 8001 to 10000 hours	\$21.03		\$6.83	\$0.63	\$0.92	\$0.00	\$0.63	\$0.10	\$0.00	\$0.00	\$30.14	\$40.66
Level 2 CE 10,001 to 12,000 hours	\$22.94		\$6.83	\$0.69	\$0.92	\$0.00	\$0.69	\$0.10	\$0.00	\$0.00	\$32.17	\$43.64
Level 3 CE 12,001 to14,000 hours	\$28.67		\$6.83	\$0.86	\$0.92	\$0.00	\$0.86	\$0.10	\$0.00	\$0.00	\$38.24	\$52.58
Apprentice	BHR	Percent										
0-1000 hrs 1st Period	\$20.25	\$50.00	\$11.55	\$4.25	\$1.16	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$37.21	\$47.34
1001-2000 hrs 2nd Period	\$22.28	\$55.00	\$11.55	\$4.67	\$1.16	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$39.66	\$50.79
2001-3500 hrs 3rd Period	\$24.30	\$60.00	\$11.55	\$5.09	\$1.16	\$0.00	\$2.40	\$0.00	\$0.00	\$0.00	\$44.50	\$56.65
3501-5000 hrs 4th Period	\$26.33	\$65.02	\$11.55	\$5.52	\$1.16	\$0.00	\$2.60	\$0.00	\$0.00	\$0.00	\$47.16	\$60.33
5001-6500 hrs 5th Period	\$28.35	\$70.00	\$11.55	\$5.94	\$1.16	\$0.00	\$2.80	\$0.00	\$0.00	\$0.00	\$49.80	\$63.98

6501-8000 hrs 6th Period	\$32.40	\$80.00	\$11.55	\$6.79	\$1.16	\$0.00	\$3.20	\$0.00	\$0.00	\$0.00	\$55.10	\$71.30

(*)Special Calculation Note :

Other for CW/CE: Education Fund

Ratio :

1 to 3 Journeyman to 2 Apprentices 4 to 6 Journeyman to 4 Apprentices Ratio Construction Wireman and Construction Electrician 1 Journeyman to 2 Apprentices to 2 CW/CE With a MAXIMUM of 12 CW/CE an on any jobsite Construction Wireman and Construction Electricians may work on residential projects without working under the supervision of a Journeyman Wireman. On ALL other job sites, Construction Wireman and Construction Electricians CAN only be employed after an APPRENTICE IS EMPLOYED on the job site.

Jurisdiction (* denotes special jurisdictional note) :

Champaign, Clark, Delaware, Fairfield, Franklin, Madison, Pickaway*, Union

Special Jurisdictional Note :

In Pickaway County the following townships:
Circleville,Darby,Harrison,Jackson,Madison,Monroe,Muhlenberg,Scioto,Walnut,Washington.

Details :

The scope of work for the light commercial agreement shall apply to the following facilities not to exceed 200,000 square feet; office buildings, shopping centers, auto sales agencies and garages, churches, funeral homes, nursing homes, hotels, retail and wholesale facilities, small stand-alone manufacturing facilities when free standing and not part of a larger facility (not to exceed 50,000 square fee), solar projects (500 panels or less) unless otherwise covered under the agreement, lighting retrofits (when not associated with remodels involving branch re-circuiting) lighting retrofits shall be defined as the changing of lamps and ballasts in existing light fixtures and shall also include the one for one replacement of existing fixtures, warehouses, gas stations, food service centers, restaurants, entertainment facilities, hospitals, clinics, motels, residential buildings.

Prevailing Wage Rate Skilled Crafts

Name of Union: Electrical Local 82 Inside

Type of Rate: Commercial

Change #:
LCN01-2024ib

Craft:
Electrical

Effective Date:
12/2/2024

Effective Date:
12/2/2024

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Electrician	\$38.00		\$7.85	\$9.14	\$0.65	\$0.00	\$4.05	\$0.00	\$0.00	\$0.00	\$59.69	\$78.69
Apprentice	BHR	Percent										
1st period 0 - 1000 hrs	\$17.48	\$46.00	\$4.40	\$0.72	\$0.30	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$22.90	\$31.64
2nd period 1001-2000 hrs	\$17.48	\$46.00	\$4.40	\$0.72	\$0.30	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$22.90	\$31.64
3rd period 2001-3500 hrs	\$19.00	\$50.00	\$7.35	\$4.97	\$0.32	\$0.00	\$2.03	\$0.00	\$0.00	\$0.00	\$33.67	\$43.17
4th period 3501-5000 hrs	\$19.76	\$52.00	\$7.37	\$5.17	\$0.34	\$0.00	\$2.11	\$0.00	\$0.00	\$0.00	\$34.75	\$44.63
5th period 5001-6500 hrs	\$23.56	\$62.00	\$7.47	\$6.17	\$0.40	\$0.00	\$2.51	\$0.00	\$0.00	\$0.00	\$40.11	\$51.89
6th period 6501-8000 hrs	\$29.26	\$77.00	\$7.62	\$7.66	\$0.50	\$0.00	\$3.12	\$0.00	\$0.00	\$0.00	\$48.16	\$62.79

(*)Special Calculation Note :

Ratio :

1 to 3 Journeymen to 4 Apprentices 4 to 6 Journeymen to 8 Apprentices

Jurisdiction (* denotes special jurisdictional note) :

Clinton, Darke, Greene, Miami, Montgomery, Preble, Warren*

Special Jurisdictional Note :

The following townships in Warren County are included: Clearcreek, Franklin and Wayne.

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Electrical Local 972 Voice Data Video

Type of Rate: Commercial

Change #:
LCN01-2023ib

Craft:
Voice Data Video

Effective Date:
5/31/2023

Effective Date:
5/31/2023

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Electrical Installer Technician	\$27.00		\$9.35	\$2.40	\$0.37	\$0.00	\$0.81	\$0.70	\$0.00	\$0.00	\$40.63	\$54.13
Apprentice	BHR	Percent										
1st period	\$14.85	\$55.00	\$9.35	\$0.00	\$0.37	\$0.00	\$0.45	\$0.70	\$0.00	\$0.00	\$25.72	\$33.15
2nd period	\$17.55	\$65.00	\$9.35	\$0.00	\$0.37	\$0.00	\$0.53	\$0.70	\$0.00	\$0.00	\$28.50	\$37.28
3rd period	\$20.25	\$75.00	\$9.35	\$2.40	\$0.37	\$0.00	\$0.61	\$0.70	\$0.00	\$0.00	\$33.68	\$43.81
4th period	\$21.60	\$80.00	\$9.35	\$2.40	\$0.37	\$0.00	\$0.65	\$0.70	\$0.00	\$0.00	\$35.07	\$45.87
5th period	\$22.95	\$85.00	\$9.35	\$2.40	\$0.37	\$0.00	\$0.69	\$0.70	\$0.00	\$0.00	\$36.46	\$47.94
6th period	\$24.30	\$90.00	\$9.35	\$2.40	\$0.37	\$0.00	\$0.73	\$0.70	\$0.00	\$0.00	\$37.85	\$50.00

(*)Special Calculation Note :

OTHER IS: NATIONAL ELECTRIC BENEFITS FUND & SUPPLEMENTAL HEALTH

Ratio :

1-3 Journeymen to 2 Apprentices 4-6 Journeymen to 4 Apprentices Etc. - Ect.

Jurisdiction (* denotes special jurisdictional note) :

Athens, Meigs, Monroe, Morgan, Noble, Vinton*, Washington

Special Jurisdictional Note :

In Vinton County the following townships: Brown, Knox, Madison, Vinton and Wilkesville.

Details :

TELEDATA WORK - DOES NOT INCLUDE: 1. The installation of computer systems in industrial applications such as assembly line, robotics, computer controller manufacturing systems shall not be a part of this Agreement. 2. The installation of conduit and/or raceways shall be installed by Inside Wireman. On site where there is no Inside Wireman employed, the Teledata Technician may install raceway or conduit not greater than 10 feet. 3. Fire alarm work is excluded on all new construction sites or wherever the fire alarm system is installed in conduit. 4. All HVAC control work shall NOT be a part of this Agreement.

Prevailing Wage Rate Skilled Crafts

Name of Union: Ironworker Local 550

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Ironworker

Effective Date:
5/1/2025

Effective Date:
5/1/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Ironworker	\$36.00		\$10.52	\$9.27	\$0.78	\$0.00	\$3.00	\$0.21	\$0.00	\$0.00	\$59.78	\$77.78
Apprentice	BHR	Percent										
1st 6 months	\$23.40	\$65.00	\$10.52	\$9.27	\$0.78	\$0.00	\$3.00	\$0.21	\$0.00	\$0.00	\$47.18	\$58.88
2nd 6 months	\$24.84	\$69.00	\$10.52	\$9.27	\$0.78	\$0.00	\$3.00	\$0.21	\$0.00	\$0.00	\$48.62	\$61.04
3rd 6 months	\$26.28	\$73.00	\$10.52	\$9.27	\$0.78	\$0.00	\$3.00	\$0.21	\$0.00	\$0.00	\$50.06	\$63.20
4th 6 months	\$27.72	\$77.00	\$10.52	\$9.27	\$0.78	\$0.00	\$3.00	\$0.21	\$0.00	\$0.00	\$51.50	\$65.36
5th 6 months	\$29.16	\$81.00	\$10.52	\$9.27	\$0.78	\$0.00	\$3.00	\$0.21	\$0.00	\$0.00	\$52.94	\$67.52
6th 6 months	\$30.60	\$85.00	\$10.52	\$9.27	\$0.78	\$0.00	\$3.00	\$0.21	\$0.00	\$0.00	\$54.38	\$69.68
7th 6 months	\$32.40	\$90.00	\$10.52	\$9.27	\$0.78	\$0.00	\$3.00	\$0.21	\$0.00	\$0.00	\$56.18	\$72.38
8th 6 months	\$34.20	\$95.00	\$10.52	\$9.27	\$0.78	\$0.00	\$3.00	\$0.21	\$0.00	\$0.00	\$57.98	\$75.08

(*)Special Calculation Note :

OTHER: JIW Upgrading & Drug Testing Fund

Ratio :

4 Journeymen to 1 Apprentice 1 Journeymen to 1 Apprentice, spinning of cable for suspension bridge 1 Journeymen to 1 Apprentice, ornamental work 2 Journeymen to 1 Apprentice, reinforcing work 1 Journeymen to 2 Apprentice, roadway

Jurisdiction (* denotes special jurisdictional note) :

Ashland, Carroll, Columbiana*, Coshocton, Holmes*, Huron, Mahoning*, Medina*, Portage*, Richland, Stark, Summit*, Tuscarawas, Wayne

Special Jurisdictional Note :

The jurisdictional line between Local 17 and Local 550 is determined as follows: All territory North of Old Route 224 line to be within the jurisdiction of Local 17. All territory South of Old Route 224 line is to be the jurisdiction of Local 550, except for everything within the City limits of Barberton which shall be under the jurisdiction of Local 17.

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Labor HevHwy 1B

Type of Rate: Commercial

Change #:
LCN02-2025ib

Craft:
Laborer Group 1

Effective Date:
6/11/2025

Effective Date:
6/11/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Laborer Group 1	\$38.93		\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$55.03	\$74.50
Group 2	\$39.10		\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$55.20	\$74.75
Group 3	\$39.43		\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$55.53	\$75.25
Group 4	\$39.88		\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$55.98	\$75.92
Watch Person	\$32.00		\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$48.10	\$64.10
Apprentice	BHR	Percent										
0-1000 hrs	\$31.14	\$80.00	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$47.24	\$62.82
1001-2000 hrs	\$33.09	\$85.00	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$49.19	\$65.74
2001-3000 hrs	\$35.04	\$90.00	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$51.14	\$68.66
3001-4000 hrs	\$36.98	\$95.00	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$53.08	\$71.58
More than 4000 hrs	\$38.93	\$100.00	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$55.03	\$74.50

(*)Special Calculation Note :

Watchman have no Apprentices. Tunnel Laborer rate with air-pressurized add \$1.00 to the above wage rate
Commercial Driver's License – Any Laborer required to utilize a valid Commercial Driver's License (CDL), are in compliance with necessary FMCSA regulations and approved by the Contractor to operate a Commercial Motor Vehicle (CMV), shall be paid one dollar (\$1.00) per hour above the base rate for the entirety of their working shift.

Ratio :

1 Journeymen to 1 Apprentice 3 Journeymen to 1 Apprentice thereafter

Jurisdiction (* denotes special jurisdictional note) :

Cuyahoga, Geauga

Special Jurisdictional Note :

Hod Carriers and Common Laborers - Heavy, Highway, Sewer, Waterworks, Utility, Airport, Railroad, Industrial and Building Site

Details :

Group 1 Laborer (Construction); Plant Laborer or Yardman, Right-of-way Laborer, Landscape Laborer, Highway Lighting Worker, Signalization Worker, (Swimming) Pool Construction Laborer, Utility Man, *Bridge Man, Handyman, Joint Setter, Flagperson, Carpenter Helper, Waterproofing Laborer, Slurry Seal, Seal Coating, Surface Treatment or Road Mix Laborer, Riprap Laborer & Grouter, Asphalt Laborer, Dump Man (batch trucks), Guardrail & Fence Installer, Mesh Handler & Placer, Concrete Curing Applicator, Scaffold Erector, Sign Installer, Hazardous Waste (level D), Diver Helper, Zone Person and Traffic Control. *Bridge Man will perform work as per the October 31, 1949, memorandum on concrete forms, by and between the United Brotherhood of Carpenters and Joiners of America and the Laborers' International Union of North America, which states in; "the moving, cleaning, oiling and carrying to the next point of erection, and the stripping of forms which are not to be re-used, and forms on all flat arch work shall be done by members of the Laborers' International Union of North America." Group 2 Asphalt Raker, Screwwoman or Paver, Concrete Puddler, Kettle Man (pipeline), All Machine-Driven Tools (Gas, Electric, Air), Mason Tender, Brick Paver, Mortar Mixer, Skid Steer, Sheeting & Shoring Person, Surface Grinder Person, Screedperson, Water Blast, Hand Held Wand, Power Buggy or Power Wheelbarrow, Paint Stripper, Plastic fusing Machine Operator, Rodding Machine Operator, Pug Mill Operator, Operator of All Vacuum Devices Wet or Dry, Handling of all Pumps 4 inches and under (gas, air or electric), Diver, Form Setter, Bottom Person, Welder Helper (pipeline), Concrete Saw Person, Cutting with Burning Torch, Pipe Layer, Hand Spiker (railroad), Underground Person (working in sewer and waterline, cleaning, repairing and reconditioning). Tunnel Laborer (without air), Caisson, Cofferdam (below 25 feet deep), Air Track and Wagon Drill, Sandblaster Nozzle Person, Hazardous Waste (level B), ***Lead Abatement, Hazardous Waste (level C) ***Includes the erecting of structures for the removal, including the encapsulation and containment of Lead abatement process. Group 3 Blast and Powder Person, Muckers will be defined as shovel men working directly with the miners, Wrencher (mechanical joints & utility pipeline), Yarnier, Top Lander, Hazardous Waste (level A), Concrete Specialist, Curb Setter and Cutter, Grade Checker, Concrete Crew in Tunnels. Utility pipeline Tappers, Waterline, Caulker, Signal Person will receive the rate equal to the rate paid the Laborer classification for which the Laborer is signaling. Group 4 Miner, Welder, Gunite Nozzle Person A.) The Watchperson shall be responsible to patrol and maintain a safe traffic zone including but not limited to barrels, cones, signs, arrow boards, message boards etc. The responsibility of a watchperson is to see that the equipment, job and office trailer etc. are secure.

Prevailing Wage Rate Skilled Crafts

Name of Union: Labor Local 265A Mason Tender

Type of Rate: Commercial

Change #:
LCN01-2024ib

Craft:
Laborer

Effective Date:
6/20/2024

Effective Date:
6/20/2024

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Laborer Mason Tender/ Scaffolding/ Forklift Operator	\$25.90		\$8.40	\$9.45	\$0.40	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$44.25	\$57.20
Apprentice	BHR	Percent										
0-1000 Hours	\$20.72	\$80.00	\$8.40	\$9.45	\$0.40	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$39.07	\$49.43
1001-2000 Hours	\$22.02	\$85.02	\$8.40	\$9.45	\$0.40	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$40.37	\$51.38
2001-3000 Hours	\$23.31	\$90.00	\$8.40	\$9.45	\$0.40	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$41.66	\$53.32
3001-4000 Hours	\$24.61	\$95.00	\$8.40	\$9.45	\$0.40	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$42.96	\$55.26
Over 4000 Hours	\$25.90	\$100.00	\$8.40	\$9.45	\$0.40	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$44.25	\$57.20

(*)Special Calculation Note :

Ratio :

1 Journeymen to 1 Apprentice 3 Journeymen to 1 Apprentice thereafter per project

Jurisdiction (* denotes special jurisdictional note) :

Brown, Clermont, Clinton, Hamilton

Special Jurisdictional Note :

Details :

TENDERS: The tending of Masons and mixing, handling and conveying of all materials used by Brick or Stone Masons, whether done by hand or by any other procedure including but not limited to, all forklifts or other mechanical means, all heating and drying off all materials used by Brick or Stone Masons and cleaning and clearing of all debris. SCAFFOLDING: The building and dismantling of scaffolding and staging for Masons shall be the work of the Mason Tenders.

Prevailing Wage Rate Skilled Crafts

Name of Union: Labor Local 310

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Laborer

Effective Date:
5/7/2025

Effective Date:
5/7/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Laborer Group 1	\$33.18		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$56.52	\$73.11
Group 2	\$33.66		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$57.00	\$73.83
Group 3	\$33.43		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$56.77	\$73.49
Group 4	\$30.08		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$53.42	\$68.46
Group 5	\$27.58		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$50.92	\$64.71
Group 6	\$29.73		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$53.07	\$67.94
Group 7	\$33.68		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$57.02	\$73.86
Group 8	\$33.83		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$57.17	\$74.09
Group 9	\$28.03		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$51.37	\$65.39
Group 10	\$24.03		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$47.37	\$59.39
Group 11	\$33.33		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$56.67	\$73.34
Group 12	\$33.57		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$56.91	\$73.70
Group 13	\$34.68		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.00	\$58.02	\$75.36
Apprentice	BHR	Percent										
1-1000 hours	\$19.91	\$60.00	\$8.86	\$0.00	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$32.30	\$42.25
1001-2000 hours	\$23.23	\$70.00	\$8.86	\$5.48	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$41.10	\$52.71
2001-3000 hours	\$26.54	\$80.00	\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$49.88	\$63.16
3001-4000 hours	\$29.86	\$90.00	\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$53.20	\$68.13
4001 plus	\$33.18	\$100.00	\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.00	\$56.52	\$73.11

(*)Special Calculation Note :

Other is Supplemental Unemployment Benefit (SUB).

Ratio :

3 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Cuyahoga, Geauga, Lake

Special Jurisdictional Note :

Details :

Group 1 - Building and construction Laborers and Tenders; Asbestos Removal - hazardous materials; unloading of furniture and fixtures. Group 2 - Gunite Operating (Machines of all type). Group 3 - Laborers on swinging scaffolds; air track and wagon drill. Group 4 - Drywall stocking and handling. Group 5 - General Landscaping. Group 6 - Final Clean-up (must perform clean-up duties for entire work shift, and excludes demolition work). Group 7 - Blasters, Shooters, Caissons, Well Cylinder, Cofferdams, Mine Workers without air, acid brick tenders. Group 8 - Top man on free standing radial stack; bellman and bottom man in blast furnace and stove. Group 9 - Sewer jet. Group 10 - Heat tender. Group 11 - Firebrick. Group 12 - Mason tender handling carbon block and bottom block for blast furnace stoves, stacks etc. Group 13 - Lansing Burners.

Prevailing Wage Rate Skilled Crafts

Name of Union: Labor Local 423

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Laborer

Effective Date:
6/1/2025

Effective Date:
6/1/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Laborer Group 1	\$32.98		\$8.60	\$4.45	\$0.40	\$0.00	\$1.00	\$0.00	\$0.10	\$0.00	\$47.53	\$64.02
Group 2	\$33.29		\$8.60	\$4.45	\$0.40	\$0.00	\$1.00	\$0.00	\$0.10	\$0.00	\$47.84	\$64.49
Group 3	\$33.60		\$8.60	\$4.45	\$0.40	\$0.00	\$1.00	\$0.00	\$0.10	\$0.00	\$48.15	\$64.95
Group 4	\$33.91		\$8.60	\$4.45	\$0.40	\$0.00	\$1.00	\$0.00	\$0.10	\$0.00	\$48.46	\$65.42
Apprentice	BHR	Percent										
0-1000 hrs	\$23.09	\$70.00	\$8.60	\$4.45	\$0.40	\$0.00	\$1.00	\$0.00	\$0.10	\$0.00	\$37.64	\$49.18
1001-2000 hrs	\$26.38	\$80.00	\$8.60	\$4.45	\$0.40	\$0.00	\$1.00	\$0.00	\$0.10	\$0.00	\$40.93	\$54.13
2001-3000 hrs	\$29.68	\$90.00	\$8.60	\$4.45	\$0.40	\$0.00	\$1.00	\$0.00	\$0.10	\$0.00	\$44.23	\$59.07
3001-4000 hrs	\$31.33	\$95.00	\$8.60	\$4.45	\$0.40	\$0.00	\$1.00	\$0.00	\$0.10	\$0.00	\$45.88	\$61.55
More than 4000 hrs	\$32.98	\$100.00	\$8.60	\$4.45	\$0.40	\$0.00	\$1.00	\$0.00	\$0.10	\$0.00	\$47.53	\$64.02

(*)Special Calculation Note :

Ratio :

1 Journeymen to 1 Apprentice 4 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Fairfield, Fayette, Franklin, Hocking, Licking, Madison, Pickaway, Union

Special Jurisdictional Note :

Details :

Group 1: General Laborers, Carpenter Tender, Cathodic Protection, Cleaning Debris, Cleaning of all Material, General Clean-up including Vacuum Cleaning, Scraping and Cleaning of Walls and Floors, Landscape, Installation and Removal of Fencing, Sod Layers, All Portable Heaters, Flagman, Loading and Unloading of all Trucks, Handling and conveying all Materials, Washing of all Windows, Conveyor Belt, All Water Pumps up to and including three (3) inch intake, Watchman, Water Boy and Tool Room Attendant. Group 1- Swimming Pools, Pool Decks, Surrounding Sidewalk and Parking Garages. Group 2: Skid Steer, Concrete Specialists, Brick Tender, Stone Mason Tender, Plaster Tender, Mortar Mixer and Operator, Cement Mason Tender, Construction Specialist, All Scaffold Builders (Swinging Scaffolds), Lagging, Bush Hammering, Jack Hammer Operator, Air or Electric Pneumatic Tool Operator, Power Driven Tools, Power Buggy Operators, Pouring and Placement of all concrete, Fork Lift Operators, Power Wheelbarrow Operators, Asphalt and Blacktop Rakers, Wrecker/Demolition, Sand Blasting and Chipping, Welders on Demolition, Grade Checkers, a person on a bucket pouring concrete, Guniting Nozzle man, Wagon and Churn Drill Operator, Concrete Saw Operator, Brush Feeders on pulverizers, Pipe Layers, Bottom Man, Laser Gun, Burners, Sand Blasting of concrete, Vibrator Man, Steward, Signal Man, Caisson, Caisson Bottom Man, Piledrivers, Asbestos and Lead Abatement Laborers. Hazardous Waste (Level B): Any work requiring the following protective equipment must be paid at Group 2 rate, A protective suit and an Air Purifying Respirator (APR) with the appropriate filter canisters. The ensemble is used when contaminants are reliably known not to be hazardous to the skin and not IDLH (Immediately Dangerous To Life or Health) and correct filter protection is available. This ensemble offers adequate protection for many jobs. Heat stress may be a problem due to inherent restrictions to breathing in an APR. Also, normal job related injury risk will be nearly as high as for Level C Equipment. Group 3 Hazardous (Level C:) Any work requiring the following protective equipment must be paid at Group 3 rate, A chemically resistant splash suit and a (SCBA) or Airline Respirator. This ensemble is required when the situation is very hazardous, such as oxygen deficient atmospheres, IDLH atmospheres, or confined space entries, but the risk of skin exposure is not as great as in Level D situations. Then Level C ensemble gives the second highest level of protection, but also puts physical stress on the worker; primarily heat stress, reduced vision, dexterity and mobility directly attributable to wearing of the protective equipment. Therefore, in addition to the hazardous material, the hazard of the normal job related injuries is greatly increased. Group 4 Hazardous Waste (Level D) requiring the following protective equipment must be paid at Group 4 rate, Protective equipment is required when the area has been known to contain extremely toxic contaminants or contaminants unknown but may be expected to be extremely toxic and /or Immediately Dangerous to Life and Health (IDLH). This ensemble includes fully encapsulated chemical suit (moon suit), Self Contained Breathing Apparatus (SCBA), or Airline Fed Respirator, and various types and numbers of boots and gloves, cool vests and voice activated radios are optional equipment sometimes worn. Level D ensembles provide the highest level of protection from contaminants but places the greatest physical and mental stress on the worker. The claustrophobic environment of the moon suit causes anxiety in most people, which greatly increases the already inherent heat stress problems. Also, this ensemble reduces vision, mobility, dexterity, and communication capacity, all of which increases the risk of normal job related injuries, ie., slips, falls, caught between, etc. Hazardous Pay of \$0.25 per hour shall be paid in addition to classifications shown above Swing Scaffolds (suspended by rope or pulley), and swing scaffolds for grain storage tank or grain elevators, when the work is performed at a height of fifty (50) feet or more above the foundations or grade level, whichever is higher. Caisson work and tunnel work (depth being 15 feet or deeper) Hazardous Waste Removal & Lead Abatement Workers: Exclusive or "Hot" area with toxic or hazardous materials, when one of the following personal protective equipment ensembles will be required for necessary protection against toxic contaminants. All of the ensembles increase the risks of certain types of worker-related injuries. When Laborers complement another craft receiving premium rate of pay Laborers will also receive premium pay for this "HOT" type of work.

Prevailing Wage Rate Skilled Crafts

Name of Union: Labor Local 530 Building

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Laborer

Effective Date:
6/1/2025

Effective Date:
6/1/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Laborer Group A	\$31.57		\$8.60	\$4.45	\$0.40	\$0.00	\$1.50	\$0.00	\$0.10	\$0.00	\$46.62	\$62.41
Laborer Group B	\$33.77		\$8.60	\$4.45	\$0.40	\$0.00	\$1.50	\$0.00	\$0.10	\$0.00	\$48.82	\$65.71
Apprentice	BHR	Percent										
0-1000 Hours	\$25.26	\$80.00	\$8.60	\$4.45	\$0.40	\$0.00	\$1.50	\$0.00	\$0.10	\$0.00	\$40.31	\$52.93
1001-2000 Hours	\$26.83	\$85.00	\$8.60	\$4.45	\$0.40	\$0.00	\$1.50	\$0.00	\$0.10	\$0.00	\$41.88	\$55.30
2001-3000 Hours	\$28.41	\$90.00	\$8.60	\$4.45	\$0.40	\$0.00	\$1.50	\$0.00	\$0.10	\$0.00	\$43.46	\$57.67
3001-4000 Hours	\$29.99	\$95.00	\$8.60	\$4.45	\$0.40	\$0.00	\$1.50	\$0.00	\$0.10	\$0.00	\$45.04	\$60.04
More than 4000 Hours	\$31.57	\$100.00	\$8.60	\$4.45	\$0.40	\$0.00	\$1.50	\$0.00	\$0.10	\$0.00	\$46.62	\$62.41

(*)Special Calculation Note :

\$0.10 for LECET is for Labor Management

Ratio :

1 Journeyman to 1 Apprentice 4 Journeyman to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Guernsey, Muskingum, Noble, Perry

Special Jurisdictional Note :

Details :

Group A - Building Construction Laborers, Carpenter Tender, Tree Planters, Concrete Vibrating Operator, Pipe Layers.
Group B - Refractory Work, Mason Tenders, Mortar Mixers, Masonry Forklift (Telehandler) Operator. All Plant work, Power Plant, Steel Plant (AK Steel, Cleveland Cliffs, AMG Vanadium). All Compressed Air Work – Jackhammering (Helldog, 35#, 60#, 90# Hitters). Asbestos Removal, Lead Abatement & Solar Work.

Prevailing Wage Rate Skilled Crafts

Name of Union: Labor Local Residential (Columbus)

Type of Rate: Residential

Change #:
CN00001

Craft:
Laborer

Effective Date:
9/28/1996

Effective Date:
9/28/1996

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Laborer	\$15.30		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$15.30	\$22.95	
Apprentice	BHR	Percent										

(*)Special Calculation Note :

Ratio :

Jurisdiction (* denotes special jurisdictional note) :

Fairfield, Fayette, Franklin, Hocking, Licking, Madison, Pickaway, Union

Special Jurisdictional Note :

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Labor Local Residential (Delaware)

Type of Rate: Residential

Change #:
CN00001

Craft:
Laborer

Effective Date:
9/28/1996

Effective Date:
9/28/1996

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Laborer	\$14.42		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$14.42	\$21.63	
Apprentice	BHR	Percent										

(*)Special Calculation Note :

Ratio :

Jurisdiction (* denotes special jurisdictional note) :

Delaware

Special Jurisdictional Note :

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Labor Local Residential (Lima)

Type of Rate: Residential

Change #:
CN00001

Craft:
Laborer

Effective Date:
9/28/1996

Effective Date:
9/28/1996

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Laborer	\$15.66		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$15.66	\$23.49
Apprentice	BHR	Percent										

(*)Special Calculation Note :

Ratio :

Jurisdiction (* denotes special jurisdictional note) :

Allen, Auglaize, Mercer, Paulding, Putnam, Shelby, Van Wert

Special Jurisdictional Note :

Details :

Name of Union: Painter Local 1020 HevHwy
Type of Rate: Commercial

Type of Rate: Commercial

Effective Date:
4/2/2025

[illegible]

Quality Control/Quality Assurance, Traffic safety, Competent Person Class 5	\$31.12		\$9.85	\$7.81	\$0.38	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$49.16	\$64.72
Apprentice	BHR	Percent										
1ST 0-1500 Hrs	\$22.87	\$60.00	\$9.85	\$7.81	\$0.38	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$40.91	\$52.35
2ND 1501-3000 Hrs.	\$26.68	\$70.00	\$9.85	\$7.81	\$0.38	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$44.72	\$58.07
3RD 3001-4500 Hrs.	\$30.50	\$80.00	\$9.85	\$7.81	\$0.38	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$48.54	\$63.78
4TH 4501-6000 Hrs.	\$34.31	\$90.00	\$9.85	\$7.81	\$0.38	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$52.35	\$69.50

(*)Special Calculation Note :

Ratio :

1 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Allen, Auglaize, Champaign, Defiance, Hardin, Logan, Mercer, Paulding, Putnam, Shelby, Van Wert, Williams

Special Jurisdictional Note :

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Painter Local 123 & 238 Hvy Hwy

Type of Rate: Commercial

Change #:
LCN01-2024ib

Craft:
Painter

Effective Date:
5/1/2024

Effective Date:
5/1/2024

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Painter Bridge Class 1	\$38.68		\$6.50	\$7.20	\$0.31	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$52.69	\$72.03
Bridge Painter, Rigger, Containment Builder, Spot Blaster Class 2	\$31.68		\$6.50	\$7.20	\$0.31	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$45.69	\$61.53
Equipment Operator/ Field Mechanic, Grit Reclamation, Paint Mixer, Traffic Control, Boat Person Class 3	\$31.68		\$6.50	\$7.20	\$0.31	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$45.69	\$61.53
Concrete Sealing, Concrete Blasting/Power Washing, Etc. Class 4	\$31.68		\$6.50	\$7.20	\$0.31	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$45.69	\$61.53
Quality Control/Quality Assurance, Traffic Safety, Competent Person Class 5	\$31.68		\$6.50	\$7.20	\$0.31	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$45.69	\$61.53
Apprentice	BHR	Percent										
1st Year	\$25.14	\$65.00	\$2.30	\$6.50	\$0.31	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$34.25	\$46.82
2nd Year	\$27.08	\$70.00	\$2.30	\$6.50	\$0.31	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$36.19	\$49.72
3rd Year	\$30.94	\$80.00	\$2.30	\$6.50	\$0.31	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$40.05	\$55.53
4th Year	\$34.81	\$90.00	\$2.30	\$6.50	\$0.31	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$43.92	\$61.33

(*)Special Calculation Note :

Apprentices shall be paid proper % of the classification above..

Ratio :

1 Journeyman to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Brown, Butler, Clermont, Clinton, Hamilton, Warren

Special Jurisdictional Note :**Details :**

Industrial Work paid as commercial work above for each class which includes, Industrial Plants, repair garages, processing plants, storage tanks, warehouses, skeletons structures, bridges unless highest point of clearance is 60 feet or more whether new or old construction offices and office buildings in industrial sites are at industrial rates. Heavy & Highway Bridges-Guard Rails- Light Poles. A hazardous steeplejack rate shall apply on radio towers, stacks, light towers, water towers, steeples, skeleton steel, and exterior industrial conveyors over 25 feet, where such items require steeplejack methods and the rate of pay shall be a \$1.00 per hour above the industrial rate. Steeplejack rate to apply to bridges where highest point of clearance is 60 feet. Class 1 – Abrasive blasting of any kind. Class 2 – Bridge painting, coating application of any kind. All steel surface preparation other than abrasive blasting. All necessary rigging and containment building. All remedial/ spot blasting. Class 3 – Tend to all equipment including but not limited to abrasive blasting, power washing, spray painting, forklifts, hoists, trucks, etc. Load and unload trucks, handle materials, man safety boats, handle traffic control, clean up/ vacuum abrasive blast materials and related tasks. Class 4 – All aspects of concrete coating/ sealing including but not limited to preparation, containment, etc. Class 5 – Verify and record that all work is completed according to job specifications. Assure that all health and safety standards are adhered to. Assure all traffic is safely handled.

Prevailing Wage Rate Skilled Crafts

Name of Union: Painter Local 438 Commercial & Industrial

Type of Rate: Commercial

Change #:
LCN01-2024ib

Craft:
Painter

Effective Date:
12/24/2024

Effective Date:
12/24/2024

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Painter Brush Roll	\$31.03		\$6.35	\$8.67	\$1.05	\$0.00	\$2.14	\$0.10	\$0.00	\$0.00	\$49.34	\$64.86
Commercial- Drywall Finishers- Wall Covers-Dryvit & Stucco	\$31.03		\$6.35	\$8.67	\$1.05	\$0.00	\$2.14	\$0.10	\$0.00	\$0.00	\$49.34	\$64.86
INDUSTRIAL	\$34.04		\$6.35	\$8.67	\$1.05	\$0.00	\$2.14	\$0.10	\$0.00	\$0.00	\$52.35	\$69.37
Power Generating	\$34.04		\$6.35	\$8.67	\$1.05	\$0.00	\$2.14	\$0.10	\$0.00	\$0.00	\$52.35	\$69.37
Water Treatment	\$34.04		\$6.35	\$8.67	\$1.05	\$0.00	\$2.14	\$0.10	\$0.00	\$0.00	\$52.35	\$69.37
Apprentice	BHR	Percent										
0 - 1000 hrs	\$18.62	\$60.00	\$6.35	\$3.33	\$1.05	\$0.00	\$0.80	\$0.10	\$0.00	\$0.00	\$30.25	\$39.56
1001-2000 hrs	\$21.72	\$70.00	\$6.35	\$3.33	\$1.05	\$0.00	\$0.80	\$0.10	\$0.00	\$0.00	\$33.35	\$44.21
2001-3000 hrs	\$23.27	\$75.00	\$6.35	\$3.33	\$1.05	\$0.00	\$0.80	\$0.10	\$0.00	\$0.00	\$34.90	\$46.54
3001-4000 hrs	\$24.82	\$80.00	\$6.35	\$3.33	\$1.05	\$0.00	\$0.80	\$0.10	\$0.00	\$0.00	\$36.45	\$48.87
4001-5000 hrs	\$26.38	\$85.00	\$6.35	\$3.33	\$1.05	\$0.00	\$0.80	\$0.10	\$0.00	\$0.00	\$38.01	\$51.19
5001-6000 hrs	\$27.93	\$90.00	\$6.35	\$3.33	\$1.05	\$0.00	\$0.80	\$0.10	\$0.00	\$0.00	\$39.56	\$53.52

(*)Special Calculation Note :

Other is Drug Education Apprentice Rate is based upon Commercial Rate calculation. Please adjust accordingly for Industrial.

Ratio :

4 Journeymen to 1 Apprentice 8 Journeymen to 2 Apprentices

Jurisdiction (* denotes special jurisdictional note) :

Belmont, Harrison, Jefferson

Special Jurisdictional Note :

Details :

Base Industrial shall be paid on all work done within the confines of a manufacturing plant, mining, on all Skeleton steel structures, storage tanks of any kind and plant work. Commercial Work but not limited to: all painting, coatings, drywall finishing, and wall covering performed on all commercial structures, water and sewer treatment facilities, and all new and existing steel prefabricated buildings, and office facilities within the confines of a plant not used for manufacturing purposes, also applies to all water storage tanks. Industrial Work but not limited to: all work done within the confines of a manufacturing plant, mining facility, on all skeleton steel structures, storage tanks of any kind and plant work.

Prevailing Wage Rate Skilled Crafts

Name of Union: Painter Local 476 Bridge Painter & Hvy Hwy

Type of Rate: Commercial

Change #:
LCR01-2024ib

Craft:
Painter

Effective Date:
6/5/2024

Effective Date:
6/5/2024

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Painter Bridge Blaster Class 1	\$38.02		\$7.60	\$7.69	\$0.45	\$0.00	\$1.85	\$0.00	\$0.00	\$0.00	\$55.61	\$74.62
Class 2 Bridge Painter, Rigger, Containment Builder, Spot Blaster	\$35.02		\$7.60	\$7.69	\$0.45	\$0.00	\$1.85	\$0.00	\$0.00	\$0.00	\$52.61	\$70.12
Class 3 Equipment Operator/ Field Mechanic, Grit Reclamation, Paint Mixer, Traffic Control, Boat Person, Diver	\$33.02		\$7.60	\$7.69	\$0.45	\$0.00	\$1.85	\$0.00	\$0.00	\$0.00	\$50.61	\$67.12
Class 4 Concrete Sealing, Concrete Blasting/Power Washing/ Etc.	\$31.02		\$7.60	\$7.69	\$0.45	\$0.00	\$1.85	\$0.00	\$0.00	\$0.00	\$48.61	\$64.12
Class 5 Quality Control/Quality Assurance Traffic Safety, Competent Person	\$31.02		\$7.60	\$7.69	\$0.45	\$0.00	\$1.85	\$0.00	\$0.00	\$0.00	\$48.61	\$64.12
Apprentice	BHR	Percent										
1st Year	\$22.81	\$60.00	\$7.60	\$0.51	\$0.45	\$0.00	\$1.85	\$0.00	\$0.00	\$0.00	\$33.22	\$44.63
2nd Year	\$24.71	\$65.00	\$7.60	\$0.51	\$0.45	\$0.00	\$1.85	\$0.00	\$0.00	\$0.00	\$35.12	\$47.48
3rd Year	\$28.52	\$75.00	\$7.60	\$0.51	\$0.45	\$0.00	\$1.85	\$0.00	\$0.00	\$0.00	\$38.93	\$53.18
4th Year	\$34.22	\$90.00	\$7.60	\$7.69	\$0.45	\$0.00	\$1.85	\$0.00	\$0.00	\$0.00	\$51.81	\$68.92

(*)Special Calculation Note :

Apprentice pay based on percentage of above appropriate classification.

Ratio :

1 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Columbiana, Mahoning, Trumbull

Special Jurisdictional Note :**Details :**

· Class 1 – Abrasive blasting of any kind · Class 2 – Bridge painting, coating application of any kind. All steel surface preparation other than abrasive blasting. All necessary rigging and containment building. All remedial/ spot blasting. · Class 3 – Tend to all equipment including but not limited to abrasive blasting, power washing, spray painting, forklifts, hoists, trucks etc. Load and unload trucks, handle materials, man safety boats, handle traffic control, clean up/ vacuum abrasive blast materials and related tasks. · Class 4 – All aspects of concrete coating/ sealing including but not limited to preparation, containment, etc. Class 5 – Verify and record that all work is completed according to job specifications. Assure that all health and safety standards are adhered to. Assure all traffic is safely handled

Prevailing Wage Rate Skilled Crafts

Name of Union: Painter Local 555 Industrial

Type of Rate: Commercial

Change #:
LCN01-2024ib

Craft:
Painter

Effective Date:
6/5/2024

Effective Date:
6/5/2024

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Painter Brush Roll	\$35.02		\$6.20	\$14.94	\$0.52	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$56.68	\$74.19
Wallcovering	\$35.02		\$6.20	\$14.94	\$0.52	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$56.68	\$74.19
Sandblasting, Spray, Steam Cleaning, Pressure Washing	\$36.72		\$6.20	\$14.94	\$0.52	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$58.38	\$76.74
Bulk & Storage Tanks of 25,000 Gallons or more Capacity, Epoxy & Two Component Materials	\$36.72		\$6.20	\$14.94	\$0.52	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$58.38	\$76.74
Lead Abatement, Hazardous Waste & Toxic Materials	\$36.72		\$6.20	\$14.94	\$0.52	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$58.38	\$76.74
Apprentice	BHR	Percent										
1st Year	\$17.51	\$50.00	\$6.20	\$14.94	\$0.52	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$39.17	\$47.93
2nd Year	\$22.76	\$65.00	\$6.20	\$14.94	\$0.52	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$44.42	\$55.80
3rd Year	\$26.27	\$75.00	\$6.20	\$14.94	\$0.52	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$47.93	\$61.06
4th Year	\$31.52	\$90.00	\$6.20	\$14.94	\$0.52	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$53.18	\$68.94

(*)Special Calculation Note :

Apprentices shall be paid percentage of the above classifications.

Ratio :

3 Journeymen to 1 Apprentice 1 Journeymen to 1 Apprentice thereafter

Jurisdiction (* denotes special jurisdictional note) :

Adams, Highland, Jackson, Pike, Scioto

Special Jurisdictional Note :

Details :

Commercial work:all interior & exterior work on multiple dwelling units (5 units or more). High Rise Apartments, building with an elevator, schools,libraries,stores,churches,public buildings,amusement parks,real-estate developments, commercial garages, & instructions. Industrial work:all work on industrial plants,processing plants,storage tanks,warehouses,skeleton structures & bridges.

Prevailing Wage Rate Skilled Crafts

Name of Union: Painter Local 639 Zone 1 Sign

Type of Rate: Commercial

Change #:
LCN01-2023ib

Craft:
Painter

Effective Date:
7/5/2023

Effective Date:
7/5/2023

	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification											
Painter Sign Erector Service/Pattern/Metal Fab/Neon Class A	\$25.38	\$8.41	\$5.57	\$0.25	\$0.76	\$0.00	\$1.06	\$0.00	\$0.00	\$41.43	\$54.12
Painter Sign Erector/Service/Pattern/Metal Fab/Neon Class B	\$25.38	\$8.41	\$5.57	\$0.25	\$1.51	\$0.00	\$1.06	\$0.00	\$0.00	\$42.18	\$54.87
Painter Sign Erector/Service/Pattern/Metal Fab/Neon Class C	\$25.38	\$8.41	\$5.57	\$0.25	\$2.27	\$0.00	\$1.06	\$0.00	\$0.00	\$42.94	\$55.63
Painter Sign Erector/Service/Pattern/Metal Fab/Neon Class D	\$25.38	\$8.41	\$5.57	\$0.25	\$3.03	\$0.00	\$1.06	\$0.00	\$0.00	\$43.70	\$56.39
Computer Operator, Router, Spray Painter/Wood Class A	\$23.78	\$8.41	\$5.57	\$0.25	\$0.73	\$0.00	\$1.02	\$0.00	\$0.00	\$39.76	\$51.65
Computer Operator, Router, Spray Painter/Wood Class B	\$23.78	\$8.41	\$5.57	\$0.25	\$1.45	\$0.00	\$1.02	\$0.00	\$0.00	\$40.48	\$52.37
Computer Operator, Router, Spray Painter/Wood Class C	\$23.78	\$8.41	\$5.57	\$0.25	\$2.18	\$0.00	\$1.02	\$0.00	\$0.00	\$41.21	\$53.10
Computer Operator, Router, Spray Painter/Wood Class D	\$23.78	\$8.41	\$5.57	\$0.25	\$2.90	\$0.00	\$1.02	\$0.00	\$0.00	\$41.93	\$53.82

Final Assembly, Helper Class A	\$19.06		\$8.41	\$5.57	\$0.25	\$0.64	\$0.00	\$0.89	\$0.00	\$0.00	\$34.82	\$44.35
Final Assembly, Helper Class B	\$19.06		\$8.41	\$5.57	\$0.25	\$1.27	\$0.00	\$0.89	\$0.00	\$0.00	\$35.45	\$44.98
Final Assembly, Helper Class C	\$19.06		\$8.41	\$5.57	\$0.25	\$1.90	\$0.00	\$0.89	\$0.00	\$0.00	\$36.08	\$45.61
Final Assembly, Helper Class D	\$19.06		\$8.41	\$0.00	\$0.00	\$2.54	\$0.00	\$0.89	\$0.00	\$0.00	\$30.90	\$40.43
Apprentice	BHR	Percent										
1-2000 hrs	\$12.69	\$50.00	\$8.41	\$5.57	\$0.25	\$0.00	\$0.00	\$0.72	\$0.00	\$0.00	\$27.64	\$33.99
2001-3000 hrs	\$13.96	\$55.00	\$8.41	\$5.57	\$0.25	\$0.54	\$0.00	\$0.76	\$0.00	\$0.00	\$29.49	\$36.47
3001-4000 hrs	\$15.23	\$60.00	\$8.41	\$5.57	\$0.25	\$0.57	\$0.00	\$0.79	\$0.00	\$0.00	\$30.82	\$38.43
4001-5000 hrs	\$16.50	\$65.00	\$8.41	\$5.57	\$0.25	\$1.18	\$0.00	\$0.83	\$0.00	\$0.00	\$32.74	\$40.99
5001-6000 hrs	\$17.77	\$70.00	\$8.41	\$5.57	\$0.25	\$1.23	\$0.00	\$0.86	\$0.00	\$0.00	\$34.09	\$42.97
6001-7000 hrs	\$21.57	\$85.00	\$8.41	\$5.57	\$0.25	\$1.38	\$0.00	\$0.96	\$0.00	\$0.00	\$38.14	\$48.93
7001-8000 hrs	\$22.84	\$90.00	\$8.41	\$5.57	\$0.25	\$1.43	\$0.00	\$1.00	\$0.00	\$0.00	\$39.50	\$50.92

(*)Special Calculation Note :

Other is for paid holidays. Apprentice Pay Rate should be based on proper Classification.

Ratio :

Jurisdiction (* denotes special jurisdictional note) :

Ashland, Ashtabula, Cuyahoga, Geauga, Lake, Medina, Portage, Richland, Summit

Special Jurisdictional Note :

Details :

Class A Worker: More than 1 year but less that 2 years. Class B Worker: More than 2 years but less than 10 years.
Class C Worker: More than 10 years but less that 20 years. Class D Worker: More than 20 years

Prevailing Wage Rate Skilled Crafts

Name of Union: Roofer Local 44

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Roofer

Effective Date:
5/21/2025

Effective Date:
5/21/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Roofer	\$40.15		\$9.64	\$11.15	\$0.49	\$0.00	\$0.00	\$0.06	\$0.00	\$0.00	\$61.49	\$81.57
Applicant & Helper Trainees	\$		\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
0 to 1851 hrs	\$18.07		\$0.60	\$0.50	\$0.49	\$0.00	\$0.00	\$0.06	\$0.00	\$0.00	\$19.72	\$28.76
1852 to 3350 hrs	\$22.08		\$9.64	\$11.15	\$0.49	\$0.00	\$0.00	\$0.06	\$0.00	\$0.00	\$43.42	\$54.46
3351 to 4850 hrs	\$28.11		\$9.64	\$11.15	\$0.49	\$0.00	\$0.00	\$0.06	\$0.00	\$0.00	\$49.45	\$63.51
4851 to 6350 hrs	\$31.12		\$9.64	\$11.15	\$0.49	\$0.00	\$0.00	\$0.06	\$0.00	\$0.00	\$52.46	\$68.02
6351 to 7550 hrs	\$36.14		\$9.64	\$11.15	\$0.49	\$0.00	\$0.00	\$0.06	\$0.00	\$0.00	\$57.48	\$75.55
7551 hrs	\$40.15		\$9.64	\$11.15	\$0.49	\$0.00	\$0.00	\$0.06	\$0.00	\$0.00	\$61.49	\$81.57
Apprentice	BHR	Percent										
Start of school	\$20.08	\$50.02	\$0.60	\$0.50	\$0.49	\$0.00	\$0.00	\$0.06	\$0.00	\$0.00	\$21.73	\$31.77
600 hrs worked/72 school hrs	\$22.08	\$55.00	\$0.60	\$0.50	\$0.49	\$0.00	\$0.00	\$0.06	\$0.00	\$0.00	\$23.73	\$34.77
1200 hrs worked/144 school hrs	\$24.09	\$60.00	\$9.64	\$11.15	\$0.49	\$0.00	\$0.00	\$0.06	\$0.00	\$0.00	\$45.43	\$57.48
1800 hrs worked/216 school hrs	\$26.10	\$65.00	\$9.64	\$11.15	\$0.49	\$0.00	\$0.00	\$0.06	\$0.00	\$0.00	\$47.44	\$60.49
2400 hrs worked/288 school hrs	\$28.11	\$70.02	\$9.64	\$11.15	\$0.49	\$0.00	\$0.00	\$0.06	\$0.00	\$0.00	\$49.45	\$63.51
3000 hrs worked/360 school hrs	\$30.11	\$75.00	\$9.64	\$11.15	\$0.49	\$0.00	\$0.00	\$0.06	\$0.00	\$0.00	\$51.45	\$66.51
3600 hrs worked/432 school hrs	\$32.12	\$80.00	\$9.64	\$11.15	\$0.49	\$0.00	\$0.00	\$0.06	\$0.00	\$0.00	\$53.46	\$69.52
4200 hrs worked/504 school hrs	\$36.14	\$90.02	\$9.64	\$11.15	\$0.49	\$0.00	\$0.00	\$0.06	\$0.00	\$0.00	\$57.48	\$75.55
4800 hrs/576 school hrs	\$40.15	\$100.00	\$9.64	\$11.15	\$0.49	\$0.00	\$0.00	\$0.06	\$0.00	\$0.00	\$61.49	\$81.57

(*)Special Calculation Note :

Other is for Drug Testing.

Ratio :

2 Journeymen to 1 Apprentice 1 Applicant/Helper Trainee

Jurisdiction (* denotes special jurisdictional note) :

Ashtabula, Cuyahoga, Erie, Geauga, Lake, Lorain*, Sandusky

Special Jurisdictional Note :

Lorain (The Ohio Turnpike North)

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Sheet Metal Local 24 (Cincinnati)

Type of Rate: Commercial

Change #:
LCN01-2024ib

Craft:
Sheet Metal Worker

Effective Date:
10/16/2024

Effective Date:
10/16/2024

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Sheet Metal Worker	\$35.57		\$8.20	\$14.26	\$0.86	\$0.00	\$0.00	\$1.20	\$0.00	\$0.00	\$60.09	\$77.88
Apprentice	BHR	Percent										
1st 6 Month	\$17.79	\$50.00	\$7.44	\$4.92	\$0.86	\$0.00	\$0.00	\$0.85	\$0.00	\$0.00	\$31.86	\$40.75
2nd 6 Month.	\$18.14	\$51.00	\$7.44	\$6.12	\$0.86	\$0.00	\$0.00	\$0.85	\$0.00	\$0.00	\$33.41	\$42.48
3rd 6 Month.	\$18.54	\$52.12	\$7.44	\$6.45	\$0.86	\$0.00	\$0.00	\$0.85	\$0.00	\$0.00	\$34.14	\$43.41
4th 6 Month.	\$19.03	\$53.49	\$7.44	\$6.81	\$0.86	\$0.00	\$0.00	\$0.85	\$0.00	\$0.00	\$34.99	\$44.50
5th 6 Month.	\$19.56	\$55.00	\$8.20	\$7.40	\$0.86	\$0.00	\$0.00	\$0.85	\$0.00	\$0.00	\$36.87	\$46.66
6th 6 Month.	\$20.45	\$57.50	\$8.20	\$7.87	\$0.86	\$0.00	\$0.00	\$0.85	\$0.00	\$0.00	\$38.23	\$48.46
7th 6 Month.	\$21.34	\$60.00	\$8.20	\$8.69	\$0.86	\$0.00	\$0.00	\$0.85	\$0.00	\$0.00	\$39.94	\$50.61
8th 6 Month.	\$23.12	\$65.00	\$8.20	\$9.27	\$0.86	\$0.00	\$0.00	\$0.85	\$0.00	\$0.00	\$42.30	\$53.86
9th 6 Month.	\$24.90	\$70.00	\$8.20	\$11.31	\$0.86	\$0.00	\$0.00	\$0.85	\$0.00	\$0.00	\$46.12	\$58.57
10th 6 Month.	\$26.68	\$75.00	\$8.20	\$11.80	\$0.86	\$0.00	\$0.00	\$0.85	\$0.00	\$0.00	\$48.39	\$61.73

(*)Special Calculation Note :

OTHER: Supplemental Unemployment Benefits

Ratio :

1 Journeymen to 1 Apprentice 4 Journeymen to 2 Apprentices 7 Journeymen to 3 Apprentices 10 Journeymen to 4 Apprentices Thereafter, 3 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Brown, Clermont, Hamilton, Highland

Special Jurisdictional Note :

Details :

SECTION 01 11 00
SUMMARY OF WORK

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes the following:
 - 1. Project information.
 - 2. Work covered by Contract Documents
 - 3. Work by Owner
 - 4. Project description
 - 5. Access to site.
 - 6. Protection of persons, work, and property
 - 7. Specification and drawing conventions.
- B. Related Requirements:
 - 1. Section 01 23 00 – Alternates: Work affected by alternates.
 - 2. Section 01 50 00 – Temporary Facilities and Controls for limitation and procedures governing temporary use of Owner's facilities.

1.02 PROJECT INFORMATION

- A. Project Identification: The Grant Home Sites – Boyhood Home and Tannery
 - 1. Boyhood Home Project Location: 219 E. Grant Ave., Georgetown, Ohio 45121
 - 2. Tannery Project Location: 300 E. Grant Ave., Georgetown, Ohio 45121
 - 3. Schoolhouse Location: 508 S. Water Street, Georgetown, Ohio 45121
- B. The OWNER is:

The Ohio History Connection
800 E. 17th Ave.,
Columbus OH 43211
- C. The ARCHITECT is:

SCHOOLEY CALDWELL
Architects/Planners/Interior Designers
300 Marconi Blvd., Suite 100
Columbus, Ohio 43215
- D. The CONTRACT DOCUMENTS for the Project were prepared by the Architect and are dated July 9, 2025.
- E. Contract Documents indicate the work of the Contracts and related requirements and conditions that have an impact on the project. Related requirements and conditions that are indicated on the Contract Documents include, but are not necessarily limited to, the following:
 - 1. Existing site conditions and restrictions on use of the site.
 - 2. Work to be performed subsequent to work under this Contract.
 - 3. Requirements for Owner occupancy during the Work.

1.03 PROJECT DESCRIPTION

- A. Summary by References: Work of the Contracts can be summarized by references to the Agreement, General Conditions, Specification Sections, Drawings, Addenda and Modifications to the contract documents issued subsequent to the initial printing of this project manual and including, but not necessarily limited to, printed material referenced by any of these. It is recognized that work of the Contract is also unavoidably affected or influenced by governing regulations, natural phenomenon including weather conditions and other forces outside the contract documents.

The Grant Home Sites – Boyhood Home, Schoolhouse, and Tannery
Georgetown, Ohio

- B. Abbreviated Written Summary: Briefly and without force and effect upon the contract documents, the work of the Contracts can be summarized as follows:
1. Base Bid: Boyhood Home
 - a. The project is the restoration of the kitchen in the Grant boyhood home to a historic kitchen. No work to the adjacent docent or restroom areas. Historic furnishings and accessories are for aesthetic appearance only and will not be functional as a kitchen. The existing firebox block will be replaced with historic brick and whitewashed, along with the surround. The existing chimneys are not used.
 2. Base Bid: The Schoolhouse
 - a. The project is limited to the structural stabilization of the historic Grant schoolhouse for the continued use as a 19th century school museum. Alterations include the dismantling of the failing north exterior brick wall, to be rebuilt in-kind. Minor repairs to be made to interior
 - b. Finishes impacted by the removal and reconstruction of the wall.
 - c. Exterior masonry is to be cleaned.
 3. Base Bid: The Tannery
 - a. The project includes a lean-to addition to the original 1823 Tannery building.
 - b. The Work includes masonry restoration including cleaning, roof restoration, carpentry repairs, new windows, new wood doors and frames and other noted work.
 4. Boyhood Home Alternates:
 - a. Alternate #1 – Raise Grant stone onto concrete pad, under added exterior kiosk
 - b. Alternate #2 – Foundations and framework for exterior interpretation kiosk to be located same as existing.
 5. Schoolhouse Alternates:
 - a. Alternate #1 – Paint all exterior masonry.
 - b. Alternate #2 – Foundation and framework for exterior interpretation kiosk.
 6. Tannery Alternates:
 - a. Alternate #1 – Foundations and framework for exterior interpretation kiosk.
 - b. Alternate #2 – Outfit interior of new addition.
 - c. Alternate #3 – Demolish modern additions of the historic Tannery interior.

1.04 OWNER-FURNISHED/CONTRACTOR-INSTALLED (OFCI) PRODUCTS

- A. Owner's Responsibilities: Owner will furnish products indicated and perform the following, as applicable:
1. Provide to Contractor Owner-reviewed Product Data, Shop Drawings, and Samples.
 2. Provide for delivery of Owner-furnished products to Project site.
 3. Upon delivery, inspect, with Contractor present, delivered items.
 - a. If Owner-furnished products are damaged, defective, or missing, arrange for replacement.
 4. Obtain manufacturer's inspections, service, and warranties.
 5. Inform Contractor of earliest available delivery date for Owner-furnished products.
- B. Contractor's Responsibilities: The Work includes the following, as applicable:
1. Designate delivery dates of Owner-furnished products in Contractor's construction schedule, utilizing Owner-furnished earliest available delivery dates.
 2. Review Owner-reviewed Product Data, Shop Drawings, and Samples, noting discrepancies and other issues in providing for Owner-furnished products in the Work.
 3. Receive, unload, handle, store, protect, and install Owner-furnished products.
 4. Make building services connections for Owner-furnished products.
 5. Protect Owner-furnished products from damage during storage, handling, and installation and prior to Substantial Completion.
 6. Repair or replace Owner-furnished products damaged following receipt.
- C. Owner-Furnished/Contractor-Installed (OFCI) Products:

1. Refer to information in drawings and specifications.

1.05 CONTRACT

- A. Intent of Contract: The drawings and specifications of the contract are intended to require the Contractor to provide for everything reasonably necessary to accomplish the proper and complete finishing of the work.
 1. All work and materials included in the specifications and not shown on the drawings, or shown on the drawings and not in the specifications, shall be performed and/or furnished by the contractor as if described in both.
 2. Any incidental materials and/or work not specified in the drawings and/or the specifications which are, nevertheless, necessary for the true development thereof and reasonably inferable therefrom, the contractor shall understand the same to be implied and required, and shall perform all such work and furnish all such materials as if particularly delineated or described therein.
 3. Should there be an obvious error between the drawings and specifications, the most stringent constraints of the conflicting information shall be assumed by the contractor and it shall be the contractor's responsibility to complete the work as reasonably required, consistent with the intent of such drawings and specifications as may be interpreted by the Architect.

1.06 PROJECT CONDITIONS

- A. The building will not be occupied during construction.
- B. Supply, install, and maintain barriers, protection, warning lines, lighting, and personnel required to segregate the work area(s) from pedestrian or vehicular traffic, as well as to prevent damage to the building, its occupants, and the surrounding landscaped and paved areas. Observe all applicable OSHA requirements.
- C. Schedule and execute work without exposing the building interior to the effects of inclement weather. Protect the building and its occupants against such risks and repair/replace work related damage to the Owner's satisfaction.
- D. Supply labor, equipment, tools and appliances necessary for the proper completion of the work.
- E. Schedule, execute, and coordinate work on a daily basis so that components are installed completely and permanently as specified.
- F. Supply shoring, supports, and other items or materials necessary to brace and support the structure, fixtures, and facilities affected by the work.
- G. Work shall be performed in accordance with applicable Federal, State, and local code requirements and publications.
- H. Coordinate the work in this Section with other Sections, including preparatory work, building protection, daily clean-up, and protection of building, with occupants.

1.07 PRECONSTRUCTION CONFERENCE

- A. A preconstruction conference will be held with the Contractors, Architect, Manufacturers Representative and involved trades to discuss all aspects of the project. The Contractor's foreman or field representative will attend this conference. The foreman must be on site at all times that work is performed.
- B. The preconstruction conference shall not be held until all specified submittals have been received, reviewed and accepted as to form by the Architect.
- C. Delivery of materials and commencement of construction shall not proceed until the preconstruction conference is held. Delays in obtaining a complete set of submittals shall not extend the contracted completion date.

1.08 CONSTRUCTION SCHEDULE

- A. Proper coordination of all aspects of the work by the Contractor and any sub-trades is critical to ensure proper installation and performance of the work. The Contractor's Construction Schedule shall clearly outline the coordination between job tasks of all involved disciplines. Schedule will be strictly adhered to by the Contractor and sub-trades.

The Grant Home Sites – Boyhood Home, Schoolhouse, and Tannery
Georgetown, Ohio

- B. The Contractor's Construction Schedule shall clearly identify the on-site crew foreman and the size of the crew to be utilized. The crew size shall remain consistent and work shall be continuous throughout the project, from start-up to completion.
- C. The Architect will review the Contractor's Construction Schedule prior to the start of any work. After defining the location(s) of the work progress, the Owner shall arrange to control occupancy in the building to the greatest extent possible. It shall be the responsibility of the Contractor to supply the Owner with written notice, 72 hours in advance, if his work location(s) for a workday is different from the schedule. The Contractor shall update his Construction Schedule weekly and submit a copy to the Architect for review.

1.09 SCHEDULE OF VALUES

- A. Provide a line item breakdown of construction labor and materials costs for each Specification Section included in these Contract Documents. Additionally, provide line item values for Unit Prices, Alternates, and Allowance Work included in these Specifications. Utilize AIA Forms G702 and G703, to prepare and submit the Schedule of Values.

1.10 PERMITS

- A. The Contractor shall procure and pay all permits required, licenses and approvals necessary for the execution of his contract and is responsible for all fees for permit inspection. Building plan review has been submitted and paid for by the Architect. The Contractor must submit and pay for the Building Permit application.

1.11 CONTRACT DOCUMENTS

- A. The Contract Documents are defined in the Agreement.
- B. Project work shall be executed in accordance with the Contract Documents. Contractors shall provide all items, articles, materials, equipment, operations or methods listed, required to be provided by reason of the drawings or any part of the other Contract Documents, including all labor, materials, equipment and incidentals required or necessary for completion within the time specified in the Contract Documents.
- C. Contractors and subcontractors are responsible for careful examination of all of the Contract Documents to ascertain the full extent of the work under their contract. Work installed under the Contract that must be changed, and which could have been avoided by the foregoing reference, shall be changed and paid for by the Contractor.

1.12 CONTRACTORS USE OF PREMISES

- A. Confine operations at the site to the areas within the construction limits. Portions of the site beyond areas on which work is indicated are not to be disturbed. Conform to site rules and regulations affecting the work while engaged in project construction.
- B. Cooperate with the Owner regarding site utilization matters to achieve maximum practical use of the site while maintaining essential uses of the site and building by the Owner. Performance of work shall not interrupt the day to day operation of the Owner and shall not decrease the safety and security of its staff and the public.
- C. Supervise the work and be solely responsible for construction means, methods, techniques, sequences, dimensions and procedures and for coordinating all portions of the Work. Construction techniques or activities which decrease the building security or safety are not permitted. Coordinate fully with the Owner's requirements regarding security and safety of the building and premises.
- D. Contractors shall deliver and store materials and construction equipment to the limited exterior areas designated by Owner for such storage use. Contractor should plan to deliver bulk materials to the site on an as needed basis. Such materials and equipment shall be arranged in a neat and orderly manner, and away from pedestrian or automobile traffic. No interior storage shall be permitted. The storage area shall be barricaded by the Contractor to indicate that it is a restricted area.
 - 1. Limit use of site for work and storage as follows:
 - a. Do not use existing/completed paved areas for storage without Owner's approval.
 - b. Do not store materials within 25 feet of new or existing trees.
 - c. Restrict work and storage to areas indicated on drawings or approved by Owner.

The Grant Home Sites – Boyhood Home, Schoolhouse, and Tannery
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- d. Limit site access and parking to locations approved by Owner
 - e. Do not perform operations that would interrupt or delay Owner's daily operations.
- E. Assume full responsibility for protection and safekeeping of materials and equipment stored at site. Move any stored materials and equipment that interfere with the operations of the Owner.
- F. Temporary Facilities and Controls: Refer to Section 01 50 00 – Temporary Facilities and Controls, for specific requirements. Contractor is responsible for the following:
 - 1. Installation, operation, maintenance, and removal of each temporary facility usually considered as its own normal construction activity, and costs and use charges associated with each facility.
 - 2. Plug-in electric power cords and extension cords, supplementary plug-in task lighting, and special lighting necessary exclusively for its own activities.
 - 3. Temporary protection of Owner's property during construction activities.
 - 4. General hoisting facilities for contractor's construction activities.
 - 5. Waste disposal facilities, including collection and legal disposal of its own hazardous, dangerous, unsanitary, or other harmful waste materials.
 - 6. Progress cleaning of construction areas on a daily basis.
 - 7. Secure lockup of its own tools, materials, and equipment.
 - 8. Construction aids and miscellaneous services and facilities necessary exclusively for contractor's construction activities.
- G. Restore property of the Owner to its original condition prior to the start of construction. Refer to "Final Cleaning" section of Section 01 77 00 – Closeout Procedures. General clean-up of the site shall be performed on a daily basis.

1.13 COORDINATION

- A. 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 total Work.
 - 1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner acceptance of the completed work
 - 2. Obtain a Certificate of Occupancy from authorities having jurisdiction before limited Owner occupancy.
 - 3. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portion of the Work.

1.14 SPECIFICATION FORMATS AND CONVENTIONS

- A. Specification Format: The Specifications are organized into Divisions and Sections using the new **MASTERFORMAT™ 2020 Edition** numbering system.
 - 1. Section Identification: The Specifications use section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; based on the types of work required for this project. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of sections in the Contract Documents.
 - 2. The complete **MASTERFORMAT™ 2020 Edition** is available on-line at www.csinet.org/s_csi/docs/9400/9361.pdf
- B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
 - 2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

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- a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
3. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
4. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.
5. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- C. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.
- D. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- E. Drawing Coordination: Requirements for materials, products and equipment identified on Drawings are described in detail in the Project Manual. 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 scheduled on Drawings.
 3. Keynoting: Materials and products may be identified by keynotes referencing work within the Specification Section identified in this Project Manual.
 4. General Notes: Notes that apply to the entire work. As such, general notes apply equally to all disciplines and to all sheets within the drawing set.
 5. Coded Notes: Notes that apply to the specific discipline on the drawing sheets in which these notes appear.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01 23 00
ALTERNATES

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements for alternates.
 - 1. Provide price for each alternate on the Bid Form. Include cost of modifications to other work to accommodate each alternate. Include related costs such as overhead and profit.
 - 2. Alternates are described briefly in this section. The Contract Documents also define the requirements for alternates.
 - 3. Coordinate pertinent related work and modify surrounding work as required to properly integrate the work under each alternate and to provide the complete construction required by Contract Documents.
- B. Related Sections include the following:
 - 1. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 DEFINITION

- A. An alternate is an amount proposed by Bidders and stated on the Bid Form that will be added to or deducted from Base Bid amount if the Owner decides to accept a corresponding change in either scope of Work or in products, materials, equipment, systems or installation methods described in Contract documents.
 - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
 - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.03 PROCEDURES

- A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project. The cost listed for each alternate on the Bid Form shall include costs of related coordination, modification, or adjustment.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
 - 1. Execute accepted alternates under the same conditions as other work of the Contract.
 - 2. Alternates may be accepted out of sequence, in any order, at the sole discretion of the Owner.
- C. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.
 - 1. Only principle items of Work are highlighted in each mandatory alternate. Include as part of each alternate, miscellaneous devices, appurtenances, and similar items incidental to or required for a complete installation whether or not mentioned as part of the alternate.

1.04 COORDINATION

- A. Coordinate related Work and modify or adjust adjacent work as required to ensure that Work affected by each accepted alternate is complete and fully integrated in to the project.

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- B. Immediately following Contract award, prepare and distribute to each party involved, notification of the status of the Alternate, indicating whether alternate has been accepted, rejected or deferred for consideration at a later date.

1.05 DESCRIPTION OF REQUIREMENTS

- A. This section identifies alternate by number and describes the basic changes to be incorporated into the work, only when that alternate is made a part of the Work by specific provisions in the Contract.
- B. Referenced sections of specifications stipulate pertinent requirements for products and methods to achieve the work stipulated under the alternate.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 SCHEDULE OF ALTERNATES – GRANT HOME SITES – TANNERY

(Alternate numbers reference Items shown on the Bid Form)

A. ALTERNATE #1 – FOUNDATIONS AND FRAMEWORK FOR EXTERIOR INTERPRETATION KIOSK

- 1. Alternate #1 shall include all work associated with _____.
- 2. Drawing reference:
- 3. Base Bid: No new work.
- 4. Bidders shall name in the space provided on the Bid Form, the amount that would be added to the Contract, if Alternate #1 is accepted by the Owner. If accepted, Alternate #1 shall become part of the work of the Project.

B. ALTERNATE #2 – OUTFIT INTERIOR OF NEW ADDITION

- 1. Alternate #2 shall include all work associated with outfitting addition with off, restroom, gift shop and exhibit spaces.
- 2. Drawing reference:
- 3. Base Bid: Lean-to addition.
- 4. Bidders shall name in the space provided on the Bid Form, the amount that would be added to the Contract, if Alternate #2 is accepted by the Owner. If accepted, Alternate #2 shall become part of the work of the Project.

C. ALTERNATE #3 – DEMOLISH MODERN ADDITIONS OF THE HISTORIC TANNERY INTERIOR

- 1. Alternate #3 shall include all work associated with _____.
- 2. Drawing reference:
- 3. Base Bid: No work.
- 4. Bidders shall name in the space provided on the Bid Form, the amount that would be added to the Contract, if Alternate #3 is accepted by the Owner. If accepted, Alternate #3 shall become part of the work of the Project.

3.02 SCHEDULE OF ALTERNATES – GRANT HOME SITES – BOYHOOD HOME

(Alternate numbers reference Items shown on the Bid Form)

A. ALTERNATE #1 – RAISE GRANT STONE ONTO CONCRETE PAD, UNDER ADDED EXTERIOR KIOSK

- 1. Alternate #1 shall include all work associated with _____.
- 2. Drawing reference:
- 3. Base Bid: No new work.
- 4. Bidders shall name in the space provided on the Bid Form, the amount that would be added to the Contract, if Alternate #1 is accepted by the Owner. If accepted, Alternate #1 shall become part of the work of the Project.

**B. ALTERNATE #2 – FOUNDATIONS AND FRAMEWORK FOR EXTERIOR INTERPRETATION KIOSK
TO BE LOCATED SAME AS EXISTING**

1. Alternate #2 shall include all work associated with_____.
2. Drawing reference:
3. Base Bid:.
4. Bidders shall name in the space provided on the Bid Form, the amount that would be added to the Contract, if Alternate #2 is accepted by the Owner. If accepted, Alternate #2 shall become part of the work of the Project.

C. ALTERNATE #3 – REGLAZE TWO EXTERIOR WINDOWS WITH REPRODUCTION ANTIQUE GLASS

1. Alternate #3 shall include all work associated with_____.
2. Drawing reference:
3. Base Bid: No work.
4. Bidders shall name in the space provided on the Bid Form, the amount that would be added to the Contract, if Alternate #3 is accepted by the Owner. If accepted, Alternate #3 shall become part of the work of the Project.

END OF SECTION

SECTION 01 25 00
SUBSTITUTION PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions. Acceptable reasons for substitution are limited to the following conditions:
- B. Acceptable reasons for substitution are limited to the following conditions:
 - 1. Product or material specified cannot be coordinated with other work.
 - 2. Product or material specified is not acceptable to Authorities Having Jurisdiction (AHJ).
 - 3. Substitution offers substantial advantage to the Owner in terms of cost, time, or other valuable consideration.
- C. Related Sections include the following:
 - 1. Drawings and general provisions of the Contract, including General Conditions and Division 01 specification sections, apply to work of this section.
 - 2. Section 01 60 00 – Product Requirements: Product options which authorize a substitution request form.
 - 3. Individual Technical Sections: Expressed restrictions related to substitutions.
- D. Attachments following this section:
 - 1. Substitution Request Form (01 25 00A)

1.02 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents. Proposed by Contractor.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product or regulatory changes.
 - 2. Substitutions for Convenience: Changes proposed by Contractor that are not required in order to meet other Project requirements but may offer advantage to the Owner.

1.03 SUBSTITUTION PROCEDURES

- A. Substitutions: Request for substitution must be in writing. Architect will review unsolicited substitutions in accordance with the Owner/Architect Agreement.
 - 1. Where specification language does not specifically authorize substitutes, the Contractor shall use the specified product unless the Contractor can confirm a substitution is necessary for cause or convenience, as defined above, and provides a submittal, using a Substitution Request Form acceptable to the Architect, indicating all differences from the specified product.
 - 2. The Architect can reject substitutions without cause.
 - 3. Approval of Shop Drawings, product data, or samples is not a substitution approval unless clearly presented as a substitution with a Substitution Request Form attached at the time of submittal.
 - 4. Specified products that require substitution due to product unavailability, construction schedule conflicts due to strikes, acts of nature, acts of war, or errors and omissions shall use a Substitution Request Form acceptable to the Architect. Indicate each difference from the specified product's requirements.
 - 5. Architect must provide written approval for the substitution.
- B. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

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- C. Unless code required, or formally requested by the authorities having jurisdiction, the Contractor shall refrain from proposing any substitution that does not represent for the Owner at least one or a combination of the following factors:
1. An increase in durability.
 2. An improvement in performance.
 3. A reduction in cost.
 4. A reduction in the building's operational costs.
 5. A reduction in the construction schedule.
 6. An increase in the work warranty.
- D. Substitutions shall not reduce the quality of the product, material, equipment and methods required by the Contractor Documents.
- E. Substitution Requests: Submit PDF electronic copy of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
1. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include: attributes such as weight, size, visual effect, durability, performance, operation costs, warranty, sustainable design characteristics, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for Project, from a laboratory chosen from common agreement.
 - j. If during the execution of the work, the Owner is in disagreement with the laboratory's testing, the Owner shall hold the right to hire a different laboratory and the Contractor shall be required to accept such test results and consequences.
 - k. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time.
 - l. Cost information, including a proposal of change, if any, in the Contract Sum. Contract's Unit prices shall be used as reference for cost analysis of any substitution.
 - m. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
 - n. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
 2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify the Owner of its recommendation for acceptance or rejection of proposed substitution within ten (10) business days of receipt of request, or five (5) business days of receipt of additional information or documentation, whichever is later.
 - a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Written Site Instructions for minor changes in the Work.
 - b. Use product specified if Architect and the Owner do not issue a decision on use of a proposed substitution within time allocated.

- F. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 30 days prior to time required for preparation and review of related submittals. The decision as to whether the substitution is acceptable is solely at the discretion of the Architect.
1. Conditions: Architect will consider Contractor's request for substitution and Contractor shall inform the Architect of his recommendations, when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Requested substitution provides sustainable design characteristics that specified product provided for achieving LEED prerequisites and credits.
 - c. Substitution request is fully documented and properly submitted.
 - d. Requested substitution will not adversely affect Contractor's construction schedule.
 - e. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - f. Requested substitution is compatible with other portions of the Work.
 - g. Requested substitution has been coordinated with other portions of the Work.
 - h. Requested substitution provides specified warranty.
 - i. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
 - j. The communication of approval always shall be issued by the Architect subject to prior approval by the Owner. Approvals without the Owner acceptance will not be valid.
- G. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect. The decision as to whether the substitution is acceptable is solely at the discretion of the Architect.
1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.
 - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - d. Requested substitution of material or product which requires substantial similarity in appearance and coordination with other finishes, will not require revisions to color palette as determined by the Architect.
 - e. Substitution request is fully documented and properly submitted.
 - f. Requested substitution will not adversely affect Contractor's construction schedule.
 - g. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - h. Requested substitution is compatible with other portions of the Work.
 - i. Requested substitution has been coordinated with other portions of the Work.
 - j. Requested substitution provides specified warranty.
 - k. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
 - l. The communication of approval always shall be issued by the Architect subject to prior approval by the Owner. Approvals without the Owner's acceptance will not be valid.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Architect's Process: Unless it is mutually agreed to utilize web-based Construction Contract Administration (CCA) software system for tracking and responding to communications between the Architect and the Contractor, documents will be transmitted as PDFs via email or FTP. Documents will be sent as PDF or other standard format (MS Word, Excel, JPEG, etc.) via email or the Architects FTP site.

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1. Contractor shall prepare requests and submittals on electronic forms acceptable to Architect and Owner provided the data included is consistent with the Substitution Request Form included after the end of this Section.

PART 2 – PRODUCTS

2.01 PRODUCT SUBSTITUTIONS

- A. Conditions: Architect will consider subcontractor's request for substitution after contract award when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 2. Requested substitution does not require extensive revisions to the Contract Documents.
 3. Requested substitution is consistent with the Contract Documents, meets specified requirements, and will produce indicated results.
 4. Substitution request is fully documented and properly submitted.
 5. Requested substitution will not adversely affect Contractor's Construction Schedule.
 6. Requested substitution has received necessary approvals of authorities having jurisdiction.
 7. Requested substitution is compatible with other portions of the Work.
 8. Requested substitution has been coordinated with other portions of the Work.
 9. Requested substitution provides specified warranty.
 10. If requested substitution involves more than one subcontractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all subcontractors involved.

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01 25 00A
SUBSTITUTION REQUEST FORM

TO: Schooley Caldwell c/o Ms. Kalpa Baghasingh kbaghasingh@schooleycaldwell.com	PROJECT: The Grant Home Sites - Boyhood Home, Schoolhouse, and Tannery SC Project No. 24240.00 Due Date: July 24, 2025, at 5:00 p.m. (refer to Section 01 25 00)

A proposed substitution cannot legally be included in a bid or used in the Work until it appears in an Addendum or other Contract Modification as defined in the General Conditions. See "Invitation to Bid" and Section 01 60 00 – Product Requirements.

PROVIDE THE FOLLOWING INFORMATION. FAILURE TO PROVIDE THE INFORMATION COMPLETELY WILL BE CAUSE FOR REJECTION OF THE SUBSTITUTION.

SPECIFIED PRODUCT:

Specified Product: _____
Specified Manufacturer: _____
Specification Section: _____ Page: _____ Article: _____ Paragraph: _____

PROPOSED PRODUCT:

Product Name: _____
Manufacturer Name: _____
Manufacturer Web site: _____

QUESTIONS:

Answer the following questions using a separate attachment:

In your opinion, is the proposed product equivalent to the specified product?
Are the product characteristics the same as the specified product? (Dimensions, material properties?)
Are the product warranties the same? If not, list differences (Include attachment documenting warranty).
Does the proposed product require modifications to the building construction details?
Color: Is the same color available at no upcharge? Is another color selection required that doesn't match the specified product?
Will the construction time be affected if this proposed product is approved?
Has the proposed product been used locally?

Name of Facility: _____
Address: _____
Contact Person: _____ Phone: _____

Is product represented locally?
Supplier/Representative: _____ Phone: _____

Are approved installer(s) available locally?
Approved Installer(s): _____

Provide an attachment that lists a minimum of three similar projects completed by each installer. Include contact name and telephone number.

ATTACHMENTS:

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ Other

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Include the following attachments:

1. Copy of the Project Manual Section where the proposed equal product would be specified, rewritten or red-lined to include any changes necessary to correctly specify the proposed equal product. Identify completely changes necessary to the original Project Manual Section.
2. Copies of details, elevations, cross-sections, and other elements of the Construction Drawings redone as necessary to show changes necessary to accommodate proposed equal product. Identify completely the changes from the original Drawings.
3. Complete product literature and technical data, installation and maintenance instructions, test results, and other information required to show complete conformance with requirements of the Contract Documents.

CERTIFICATION:

Signature on this document provides that the proposer certifies that the following statement and accompanying attachments are true:

1. Substitute product has been fully investigated and determined to be equal or superior in all respects to the specified product performance.
2. Same warranty will be furnished for proposed substitution product as for specified product.
3. Same maintenance service and source of replacement parts, as applicable, is available.
4. Proposed equal product will have no effect on other trades and will not affect or delay progress schedule.
5. Proposed equal product does not affect dimensions and functional performance values.
6. Payment will be made to the Architect for changes to building design, including Architect design, detailing, and construction costs caused by the substitution.
7. The undersigned further states that the function, appearance, and quality of the proposed product are equivalent or superior to the specified item:

Submitted by: _____

Signature: _____

Typed Name: _____

Company: _____

Address: _____

_____ Zip Code: _____

Telephone: _____ Fax: _____

Attachments (List): _____

ARCHITECT REVIEW AND ACTION: (For use of the Architect only)

- _____ Proposed product accepted.
- _____ Proposed product not in compliance with instructions. Respond to attached comments and resubmit.
- _____ Proposed product not acceptable. Use specified product(s).
- _____ Not Reviewed. Submission received too late. Use specified product(s).

ADDITIONAL REVIEWER COMMENTS: (For use of the Architect only)

END OF SECTION

SECTION 01 26 13
REQUESTS FOR INFORMATION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Requests for Information.
- B. Related Sections include the following:
 - 1. Drawings and general provisions of the Contract, including General Conditions and Division 01 specification sections, apply to work of this section.

1.02 DEFINITIONS

- A. Definitions used in this article are not intended to change or modify the meaning of other terms in the Contract Documents.
- B. Request for Information (RFI): A request for information by the Contractor to the Architect for clarification of intent of any portion of the Contract Documents after the award of Contract and during the construction phase of the Project.
- C. The following are NOT Requests for Information:
 - 1. Change Orders.
 - 2. Substitution Request.
 - 3. Bulletin.
 - 4. Field Order.
 - 5. Shop Drawings.
 - 6. Normal questions contained in a typical shop drawing submittal.
 - 7. Clarifications during bidding.

1.03 REQUESTS FOR INFORMATION (RFI'S) DURING CONSTRUCTION

- A. RFI's are logged-in at the Architect's Office, not necessarily with same date as indicated by the Contractor on RFI form. The response time will commence upon the date of receipt by the Architect.
 - 1. Copies of RFI's sent by the Contractor and received by the Architect after 2:00 p.m. will be considered received the following Monday, holidays excepted at 8:00 a.m. and are to be dated as such.
- B. Requests for Information (RFI): If clarification of any portion of Construction Documents is required, submit a Request for Information to the Architect in accordance with the following procedures:
 - 1. RFI Format:
 - a. Submit on a standard form developed by the Architect.
 - b. RFI's shall be sequentially numbered; and include the following:
 - 1) Project name.
 - 2) Project number.
 - 3) Date.
 - 4) Name of Contractor.
 - 5) Name of Architect.
 - 6) RFI number, numbered sequentially.
 - 7) RFI subject.
 - 8) Specification Section number and title and related paragraphs, as appropriate.
 - 9) Drawing number and detail references, as appropriate.
 - 10) Field dimensions and conditions, as appropriate.
 - 11) Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.

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- 12) Contractor's signature.
 - 13) Adequate space for Architect to respond, sign, and date.
 - 14) Attachments: Include sketches, descriptions, measurements, photos, Product Data, and other information necessary to fully describe items needing interpretation.
 - a) Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
 - b) Attachments shall be electronic files in Adobe Acrobat PDF format.
- C. Submit a copy of the format to the Architect at start of Project for review and comment.
- D. RFI Procedure:
1. Clearly state and completely define the issue requiring interpretation.
 2. Each RFI shall address one subject or issue.
 1. Each RFI shall contain specific reference to the drawing number(s), detail number(s), schedule type(s), bulletin number(s), specification section(s) and paragraph number(s), or other related document(s) which is (are) pertinent to the Contractor's question. The date of each referenced drawing number, bulletin, specification section, or other related document shall be identified. In preparing each RFI verify the applicable dimension(s), field conditions, drawing requirements (small through large-scale details), and/or specification section requirements pertaining thereto.
 2. Prior to submission of an RFI coordinate the nature of the inquiry with the requirements of other sections or trades as related thereto, as well as responses to previous RFI's. Where supplementary sketches are required to clarify an inquiry the Contractor shall attach supplementary sketches, at large scale, illustrative of the inquiry. Sketches shall include sufficient detail, materials, dimensions, thicknesses, assembly, attachments, relation to adjoining work, structural grid references, and all other pertinent data and information for the Architect to make an informed response.
 - a. The Contractor is encouraged to suggest solution(s) to its inquiries, if applicable.
 - a. Should the Contractor's solution(s) have an impact on Contract Sum or Contract Time it shall be so stated within the RFI. Provide cost and schedule implications, if any.
 3. Ambiguous RFI's will be returned to Contractor without action taken.
- E. RFI Submission Process:
1. Submit an RFI, in writing, to the Architect immediately when any issue requiring clarification arises.
 - a. Unless specifically stated on RFI, the Architect will assume adjustments to the Contract Amount and the Project Schedule are NOT REQUIRED.
 2. The Architect will review and respond only to RFI's received in writing from the Contractor.
 3. Submit electronic copies of each RFI and Architect response, including any supplemental drawings and additional instructions, to the Architect for record purposes.
 4. RFI's submitted to the Architect of without following these submission procedures will result in rejection of the submission.
- F. RFI Log:
1. Maintain an RFI log indicating the RFI number, subject, date, response date and impact, if any on schedule and cost.
 2. Publish the log at least bi-monthly to the Architect.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01 29 00
PAYMENT PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contractor's applications for payment.
- B. Related Sections include the following:
 - 1. Drawings and general provisions of the Contract, including General Conditions and Division 01 specification sections, apply to work of this section.

1.02 DEFINITIONS

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

1.03 SCHEDULE OF VALUES

- A. Coordinate preparation of Schedule of Values with preparation of Construction Schedule.
 - 1. Prepare Schedule of Values, typed, on AIA Form G703 – Application and Certificate for Payment Continuation Sheet.
 - 2. Correlate line items in schedule of values with other required administrative schedules and forms including:
 - a. Construction schedule.
 - b. Application for payment form.
 - c. List of subcontractors.
 - d. List of products.
 - e. List of principal suppliers and fabricators.
 - f. Schedule of submittals.
 - 3. Submit Schedule of Values to Contractor within 7 days after contract award.
 - a. Schedule of Values shall be approved by the Contractor prior to initial application.
 - 4. Submit schedule of values to Owner/Architect at the earliest feasible date, but in no case later than 30 days before the date scheduled for submittal of initial application for payment.
 - 5. Provide separate schedule of values for each phase of the Project.
- B. Format and Content: Use the Project Manual table of contents format (specification section numbers and names) to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.
 - 1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Name of Architect.
 - c. Architect's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
 - 2. Arrange the schedule of values in tabular form with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or Division.
 - b. Description of the Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.

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- f. Change Orders (numbers) that affect value.
 - g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
 - 1) Labor.
 - 2) Materials.
 - 3) Equipment.
- 3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
- 4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
- 5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.
- 6. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
- 7. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
- 8. Purchase Contracts: Provide a separate line item in the schedule of values for each purchase contract. Show line-item value of purchase contract. Indicate owner payments or deposits, if any, and balance to be paid by Contractor.
- 9. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
- 10. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.04 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
 - 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: Contractor shall submit application for payment at regularly scheduled pay meetings as established at the Pre-Construction Conference. The period covered by each Application for Payment shall be clarified at the Pre-Construction Conference.
- C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703, or other form approved by the Owner, as form for Applications for Payment.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
 - 1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 - 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
 - 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
 - 4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

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- E. **Stored Materials:** Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
 2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 3. Provide summary documentation for stored materials indicating the following:
 - a. Materials previously stored and included in previous Applications for Payment.
 - b. Work completed for this Application utilizing previously stored materials.
 - c. Additional materials stored with this Application.
 - d. Total materials remaining stored, including materials with this Application.
- F. **Transmittal:** Submit three signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- G. **Waivers of Mechanic's Lien:** With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit conditional final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
- H. **Initial Application for Payment:** Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
 2. Schedule of values.
 3. Contractor's construction schedule (preliminary if not final).
 4. Combined Contractor's construction schedule (preliminary if not final) incorporating Work of multiple contracts, with indication of acceptance of schedule by each Contractor.
 5. Products list (preliminary if not final).
 6. Schedule of unit prices.
 7. Submittal schedule (preliminary if not final).
 8. List of Contractor's staff assignments.
 9. List of Contractor's principal consultants.
 10. Copies of building permits.
 11. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 12. Initial progress report.
 13. Certificates of insurance and insurance policies.
 14. Performance and payment bonds.
- I. **Application for Payment at Substantial Completion:** After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- J. **Final Payment Request:** Submit final Payment Request per ¶9.7 of the General Conditions:

- K. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 3. Updated final statement, accounting for final changes to the Contract Sum.
 4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 6. AIA Document G707, "Consent of Surety to Final Payment."
 7. Evidence that claims have been settled.
 8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
 9. Final liquidated damages settlement statement.

1.05 RECOMMENDATION FOR PAYMENT BY THE ARCHITECT

- A. Issuance of Recommendation For Payment by the Architect, constitutes a representation by the Architect to the Owner, based on his observations at the Project Site, as provided in the Owner- Architect Agreement, and data comprising the Application For Payment, the Work has progressed to the point indicated; to the best of his knowledge, information and belief, the quality of Work is in accordance with the Contract Documents (subject to evaluation of the Work for conformance with the Contract Documents upon substantial completion, to the results of any subsequent test required by or performed under the Contract Documents, to minor deviations from the Contract Documents correctable prior to completion, and to any specific qualifications stated in this certificate); and the Contractor is entitled to payment in the amount recommended.
- B. However, by issuing a Certificate of Payment, the Architect shall not thereby be deemed to represent that he has made exhaustive or continuous on-site inspections to check the quality of Work or that he has reviewed the construction means, methods, techniques, sequences or procedures, or has made any examination to ascertain or for what purpose the Contractor has used monies previously paid on account of the Contract sum.
- C. A recommendation for payment or a progress payment does not constitute acceptance of Work in accordance with Contract Documents.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01 31 00
PROJECT COORDINATION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General project coordination procedures.
 - 2. Project coordination
 - 3. Project meetings and conferences
 - 4. Administrative and supervisory personnel.
 - 5. Digital Project Management Procedures
 - 6. Coordination drawings.
- B. Each subcontractor shall participate in coordination requirements. Although certain areas of responsibility may be assigned by contract to a specific subcontractor, the Contractor shall be responsible for the overall coordination of all the work.
- C. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Drawings and general provisions of the Contract, including General Conditions and Division 01 specification sections, apply to work of this section.
 - 2. Section 01 11 00 – Summary of Work.
 - 3. Section 01 26 13 – Requests for Interpretation (RFI)
 - 4. Section 01 33 00 – Submittal Procedures: For preparing and submitting Contractor's construction schedule.
 - 5. Section 01 73 00 – Execution: For procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 6. Section 01 77 19 – Closeout Requirements: For coordinating closeout of the Contract.

1.02 ADMINISTRATIVE REQUIREMENTS

- A. Architect's Process: Unless it is mutually agreed to utilize web-based Construction Contract Administration (CCA) software system for tracking and responding to communications between the Architect and the Contractor, documents will be transmitted as PDFs via email or FTP. Documents will be sent as PDF or other standard format (MS Word, Excel, JPEG, etc.) via email or the Architects FTP site.
 - 1. Prepare requests and submittals on electronic forms acceptable to Architect.

1.03 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
 - 4. Arrange pipes, ducts, conduits, and other overhead systems in an orderly manner when indicated to remain exposed.
- B. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for sub-contractors if coordination of their Work is required.

- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's Construction Schedule.
 - 2. Preparation of the Schedule of Values.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Delivery and processing of submittals.
 - 5. Progress meetings.
 - 6. Preinstallation conferences.
 - 7. Startup and adjustment of systems.
 - 8. Project closeout activities.
- D. In finished areas, except as otherwise indicated, conceal pipes, ducts, and wiring within construction. Coordinate location of fixtures and outlets with finish elements. Bring unconcealed conditions indicated to the attention of the Architect for confirmation of intent.
- E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1.04 PROJECT COORDINATION

- A. Coordinate work of subcontractors including that related to:
 - 1. Temporary facilities and controls.
 - 2. Work specified in Divisions 02 through 49 of the specifications.
- B. Coordinate schedules of subcontractors and material suppliers as required to:
 - 1. Verify timely deliveries and materials and products for installation by other subcontractors.
 - 2. Verify labor and materials are adequate to maintain schedules.
- C. Conduct conferences with subcontractors and other concerned parties as necessary to:
 - 1. Maintain coordination and schedules.
 - 2. Resolve matters in dispute.
- D. Participate in project meetings to ensure coordination and to:
 - 1. Report on progress of work.
 - 2. Recommend needed changes in schedules.
- E. Coordinate temporary facilities and controls as required to:
 - 1. Verify installation, operation and maintenance complies with governing codes and regulations.
 - 2. Verify adequacy of facilities and controls for construction activities and operations.
- F. Coordinate submittals. Review for compliance with requirements of Contract Documents prior to submitting.
 - 1. Verify field dimensions and clearances.
 - 2. Verify relation to available space.
 - 3. Verify settings of anchorages including anchor bolts.
 - 4. Review effects of changes in work with subcontracts and other contracts.
 - 5. Verify compatibility of equipment with work of other subcontracts.
 - 6. Verify motor voltages and control characteristics.
 - 7. Coordinate controls and interlocks to verify voltages and phase, and wiring of pneumatic electric switches and relays.
- G. Prepare coordination drawings as required to assure coordination of work and to resolve conflicts prior to installation.
- H. Observe required testing, maintain records of tests and record:
 - 1. Testing agency and name of inspector.
 - 2. Subcontract work being tested.
 - 3. Representatives present.
 - 4. Date and time of testing.

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5. Type of products or work being tested.
 6. Types of tests and results.
 7. Any retesting required.
- I. Verify subcontractors are maintaining accurate project as-built documents.
 - J. Review proposals and requests for substitutions, modifications and changes.
 1. Verify compliance with requirements.
 2. Verify compatibility with work and equipment of other subcontracts.
 3. Recommend action.
 - K. Verify work complies with requirements of Contract Documents.
 1. Maintain record of observed deficiencies and discrepancies.
 2. Promptly report deficiencies and discrepancies to Architect.
 - L. Assemble documentation associated with any claims or disputes.
 - M. Attend equipment start-up:
 1. Verify services and connections are complete and equipment is in operable condition.
 2. Observe testing, adjusting and balancing.
 3. Record results including time and date of start-up.
 - N. Coordinate inspection and acceptance of equipment.
 1. Prior to inspection, verify equipment is clean, tested and operational.
 2. Assist inspector and prepare list of items to be completed or corrected.
 3. Should acceptance and operation of equipment constitute the beginning of any specified guarantee period, prepare and transmit written notice.
 - O. Coordinate inspection and acceptance of work.
 1. Prior to inspection verify work is complete and ready for acceptance.
 2. Assist inspector and prepare list of items to be completed or corrected.
 3. Should acceptance of work constitute the beginning of any specified guarantee period, prepare and transmit written notice.
 - P. Assemble project as-built documents.
 - Q. Submit copies of lists, tests and operating logs to Architect.

1.05 REQUESTS FOR INFORMATION (RFIS)

- A. Section 01 26 13.

1.06 PROJECT MEETINGS AND CONFERENCES

- A. The General Contractor shall schedule job progress meetings with major subcontractors and shall notify the Architect of the time and place of the meeting. Subsequent meetings shall be held on the same day and hour of the week for the duration of the construction period; except, upon instructions of the Architect, the scheduled meetings may be increased or decreased as required by the progress of the work.
- B. Progress Meetings: Architect will conduct meetings at weekly intervals. Project meetings are in addition to specific meetings held for other purposes, such as pre-installation conferences. Notes shall be taken by the Architect on discussions and decisions made at each meeting. Typed copies of the notes shall be distributed by Architect to all concerned parties.
 1. Attendees: In addition to representatives of the Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

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- a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether contract is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - b. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
 - c. Agenda: Discuss items of significance that could affect progress, including the following:
 - 1) Review, edit and approve minutes of the previous progress meeting.
 - 2) Review items of significance that could affect progress including any issues needing Architect action to prevent delays.
 - 3) Include topics for discussion as appropriate to the status of the Project.
 - 4) Review Work progress, since the last meeting, compared against the latest approved Construction Schedule. Determine status of each current and near-future activity on the schedule to determine whether it is on time, ahead of schedule, or behind schedule. Pay especial attention to Critical Path items. Include Procurement activities (including fabrication and delivery dates) in the review.
 - 5) Corrective measures and procedures required to maintain Construction Schedule, if activities are behind schedule.
 - 6) Work scheduled for succeeding construction period (usually two weeks)
 - 7) Field observations and problems with proposed solutions. Review Contract deficiencies with regards to quality, safety, manpower, supervision, etc. Include report by Quality Control Manager.
 - 8) Status of Submittals (current log to be provided by Contractor).
 - 9) Status of Proposed Changes to the Work (current log to be provided by Contractor)
 - 10) Status of Requests for Information (current log to be provided by Contractor)
 - 11) Review of preliminary payment requests (as appropriate).
 - 12) Site Walk-through of the in-progress Work including site review of issues discussed during progress meeting. Walk-throughs shall be attended by, at a minimum: Contractor Superintendent, Contractor Project Manager, Architect.
- C. Preconstruction Conference: The Architect will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Contractor and Architect, but no later than three (3) days after Notice to Proceed.
1. Attendees: Architect, and their consultants; Contractor and its project manager, superintendent; Quality Control Manager, major subcontractors; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Construction schedule.
 - b. Project phasing.
 - c. Critical work sequencing and long-lead items.
 - d. Designation of responsible personnel and their duties.
 - e. List of Subcontractors.
 - f. Submittal procedures.
 - g. Procedures for processing field decisions and Change Orders.
 - h. Procedures for RFIs.
 - i. Coordination with testing and inspection agencies.
 - j. Procedures for processing Applications for Payment.
 - k. Distribution of the Contract Documents.
 - l. Preparation of as-built documents.
 - m. Use of the premises
 - n. Work restrictions.
 - o. Working hours.
 - p. Parking availability.
 - q. Owner's occupancy requirements.
 - r. Responsibility for temporary facilities and controls.

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- s. Procedures for moisture and mold control.
 - t. Procedures for disruptions and shutdowns.
 - u. Construction waste management and recycling.
 - v. Office, work, and storage areas.
 - w. Equipment deliveries and priorities.
 - x. Safety and first aid.
 - y. Security.
 - z. Housekeeping (cleaning) procedures.
3. Minutes: Contractor is responsible for conducting meeting; Architect will record and distribute meeting minutes to each party present and to parties requiring information.
- a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.
- D. Special Inspections Conference:
- 1. In accordance with the, Building Permit, and the requirements of the Authority Having Jurisdiction, a conference(s) will be conducted to review the procedures and work required under the Special Inspections Program.
 - 2. Suggested Agenda:
 - a. Discuss the State's requirements for Special Inspections.
 - b. Review proposed Inspection Plan.
 - c. Examine credentials of proposed inspection professionals and testing laboratories.
 - d. Reach an agreement on the Statement and the Schedule of Special Inspections.
 - e. Discuss detection and reporting of critical problems.
 - f. Discuss notification to the State of changes in critical services.
 - g. Review requirements for testing, inspection, observation, reports and certification by the different entities involved.
 - 3. Attendance: The following shall attend the special inspections conference:
 - a. Architect.
 - b. Structural Engineer of Record.
 - c. General Contractor.
 - d. Special Inspector
 - e. Professional in charge of Architectural Inspections.
 - f. Geotechnical Inspector; Professional in charge of Geotechnical Services.
 - g. Professional in charge of Structural Inspections (if different from Special Inspector)
 - h. Professional in charge of Materials Testing Laboratory (if different from Special Inspector).
 - i. State Representative for Special Inspections.
- E. Pre-installation Conferences: General Contractor shall conduct pre-installation conferences at the site before each construction activity that requires coordination with other construction. The installer and representatives of manufacturers and fabricators involved in or affected by the installation, and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
- 1. Attendees: Contractor's superintendent; Contractor's quality control manager, installer (installing subcontractor); representatives of manufacturers and fabricators involved in or affected by the activity, supplier; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Review the progress of other construction activities and preparations for the particular activity under consideration at each pre-installation conference, including requirements for:
 - a. Contract Documents.
 - b. Requirements for proper installation.
 - c. Related Change Orders.
 - d. Purchases and deliveries.
 - e. Deliveries
 - f. Approved submittals including Shop Drawings, Product Data and quality control Samples.
 - g. Review of mockups
 - h. Possible conflicts.

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- i. Possible conflicts and material compatibility problems.
 - j. Time schedules for activity, project schedule.
 - k. Weather limitations.
 - l. Manufacturer's written recommendations.
 - m. Warranty requirements.
 - n. Acceptability of substrates.
 - o. Temporary facilities and controls.
 - p. Space and access limitations.
 - q. Regulations of authorities having jurisdiction.
 - r. Inspection and testing requirements.
 - s. Required performance results.
 - t. Recording requirements.
 - u. Protection of construction, adjacent work.
 - 3. General Contractor: Record significant discussions and agreements and disagreements of each conference, along with the approved schedule. Promptly distribute meeting records to everyone concerned, including the Architect.
 - 4. Do not proceed if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of Work and reconvene the conference at the earliest feasible date.
- F. Coordination Meetings: Conduct Project coordination meetings for all parties (subcontractors, suppliers, etc.) involved. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and pre-installation conferences.
- 1. Attendees: Representation at each meeting by every party (Contractor, subcontractor, supplier, etc.) currently involved in construction activities. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work
 - 2. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.
- G. Construction Quality Control Meetings: Conduct and attend meetings required by Section 01 45 00 – Quality Requirements.
- H. Special Meetings: Attend special meetings when requested by the Architect at Project Site or Architects' office to discuss specific project concerns. Attendees shall include Contractor's project manager or Principal (as requested by the Architect) and any requested Subcontractor project manager or Principal (as requested by the Architect). All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.

1.07 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

- A. General: In addition to project manager, and project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work. Within 30 days of Notice-to-Proceed, submit to Architect a list of principal Contractor staff assignments, including superintendent, project manager, and other supervisory personnel in attendance at Project site.
- B. Identify individuals and their duties and responsibilities; mailing addresses, office telephone numbers, cell telephone numbers, fax numbers, and email addresses. Provide names, addresses, telephone numbers, fax numbers, and email addresses of individuals assigned as standbys in the absence of individuals assigned to Project.
- C. Post copies of list in project meeting room, in Contractor's field office. Keep list current at all times.

1.08 DIGITAL PROJECT MANAGEMENT PROCEDURES

- A. Web-Based Project Software: Provide, administer, and use web-based Project software site for purposes of hosting and managing Project communication and documentation until Final Completion.
 - 1. Web-based Project software site includes, at a minimum, the following features:
 - a. Compilation of Project data, including Contractor, subcontractors, Architect, architect's consultants, and other entities involved in Project. Include names of individuals and contact information.

- b. Access control for each entity for each workflow process, to determine entity's digital rights to create, modify, view, and print documents.
 - c. Document workflow planning, allowing customization of workflow between project entities.
 - d. Creation, logging, tracking, and notification for Project communications required in other Specification Sections, including, but not limited to, RFIs, submittals, Minor Changes in the Work, Construction Change Directives, and Change Orders.
 - e. Track status of each Project communication in real time, and log time and date when responses are provided.
 - f. Procedures for handling PDFs or similar file formats, allowing markups by each entity. Provide security features to lock markups against changes once submitted.
 - g. Processing and tracking of payment applications.
 - h. Processing and tracking of contract modifications.
 - i. Creating and distributing meeting minutes.
 - j. Document management for Drawings, Specifications, and coordination drawings, including revision control.
 - k. Management of construction progress photographs.
 - l. Mobile device compatibility, including smartphones and tablets.
 2. Provide up to seven web-based Project software user licenses for use of Architect, and Architect's consultants. Provide eight hours of software training at Architect's office for web-based Project software users.
 3. At completion of Project, provide digital archive in format that is readable by common desktop software applications in format acceptable to Architect. Provide data in locked format to prevent further changes.
 4. Provide one of the following web-based Project software packages under their current published licensing agreements:
 - a. Autodesk; Buzzsaw or Constructware.
 - b. Corecon Technologies, Inc.
 - c. Meridian Systems; Prolog.
 - d. Newforma, Inc.
 - e. Procore Technologies, Inc.
 - f. Viewpoint, Inc.; Viewpoint for Project Collaboration.
 - g. Other web-based software as approved.
- B. PDF Document Preparation: Where PDFs are required to be submitted to Architect, prepare as follows:
 1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 2. Name file with submittal number or other unique identifier, including revision identifier.
 3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.09 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings in accordance with requirements in individual Sections, where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
 1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - c. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
 - d. Show location and size of access doors required for access to concealed dampers, valves, and other controls.

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- e. Indicate required installation sequences.
 - f. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
- B. General:
- 1. Submit required coordination drawings to Architect and for record only within 60 days of Notice-to-Proceed. Coordination drawings are not shop drawings and will not be accepted or approved by the Architect.
 - 2. Coordination drawings shall show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in space provided and/or to function as intended.
 - 3. Except as otherwise specified, prepare composite coordination drawings to scale of 1/4"=1'-0" or larger; detailing major elements, components, and systems of utilities, architectural, structural, mechanical, and electrical elements, equipment and materials in relationship with each other. Include dimensions.
 - 4. Provide coordination drawings utilizing different colors to illustrate work of separate trades or systems.
 - 5. Indicate locations where space is limited for installation and access and where sequencing and coordination of installations are of importance to efficient flow of Work affecting one or more trades.
 - 6. Indicate scheduling, sequencing, movement, and positioning of large equipment into building during construction.
 - 7. Prepare floor plans, elevations, and details to indicate penetrations in floors, walls, and ceilings and their relationship to other penetrations and installations.
 - 8. Prepare reflected ceiling plans to coordinate and integrate installations, air outlets and inlets, light fixtures, communications systems components, sprinklers, and other ceiling-mounted devices.
 - 9. Show interrelationship of components to be shown on separate Shop Drawings.
 - 10. Indicate required installation sequences.
- C. Site Utilities: The coordination drawings shall include, but not be limited to, the following site utilities:
- 1. Water Distribution: Indicate pipe sizes, valve and meter locations, underground structures, connections, anchors, and reaction backing. Indicate spatial relationship between piping and other piping in same trench, and proximate structures.
 - 2. Sanitary Sewerage: Indicate pipe sizes, manholes, locations and elevations, underground structures, and connections. Indicate spatial relationship between piping and other piping in same trench, and proximate structures.
 - 3. Natural Gas Distribution: Indicate pipe sizes, valves, gas meters, and specialties. Include details of underground structures and piping. Show other piping in same trench and clearances from natural gas piping. Indicate interface and spatial relationship between piping and proximate structures.
 - 4. Electrical and Communications: Indicate manholes and other structures, conduit and ductbank sizes, locations, and elevations. Include details of underground structures and connections. Indicate spatial relationship between conduit and other piping in same trench, and proximate structures.
 - 5. Storm Drainage: Indicate pipe sizes, manholes and catch basins locations and elevations. Include details of underground structures and connections. Show other piping in the same trench and clearances from storm sewerage system piping. Indicate interface and spatial relationship between piping and proximate structures.
 - 6. Profile Drawings: Show system piping and conduits in elevation. Draw profiles at a horizontal scale of not less than 1 inch equals 50 feet and a vertical scale of not less than 1 inch equals 5 feet. Indicate pipe, conduit and underground structures. Show types, sizes, materials, and elevations of all crossing utilities on profile.
- D. Structural Systems: Include but do not necessarily limit to the following:
- 1. Structural frame showing interface with exterior elements.
 - 2. Location of openings in relation to structure.
 - 3. Show attachments to decking, structural elements, and other systems.
- E. Mechanical Systems: Include, but do not necessarily limit to, following:
- 1. Proposed locations of piping, ductwork, equipment, and materials.

2. Proposed locations for access panels and doors.
 3. Clearances for installing and maintaining insulation.
 4. Clearances for servicing and maintaining equipment, including coil removal, filter removal, and space for equipment disassembly required for periodic maintenance. Show access locations.
 5. Equipment connections and support details.
 6. Exterior wall and foundation penetrations.
 7. Fire-rated wall and floor penetrations.
 8. Sizes and location of required concrete pads and bases.
 9. Valve stem movement.
- F. Electrical Systems: Include, but do not necessarily limit to, following:
1. Proposed locations of major raceway systems, equipment, and materials.
 2. Clearances for servicing equipment, including space for equipment disassembly required for periodic maintenance. Show access locations.
 3. Exterior wall and foundation penetrations.
 4. Fire-rated wall and floor penetrations.
 5. Equipment connections and support details.
 6. Sizes and location of required concrete pads and bases.
- G. Notify Architect of conflicts and other coordination issues requiring resolution prior to commencing construction in each affected area. Respond to Architect requests for information concerning the coordination drawings.
- H. Transmit copies of final coordination to all interested parties including all concerned subcontractors. Keep a copy of all final coordination documents in the contractor's field office; make available for review and use by Architect during construction.

1.10 COORDINATION DRAWING SUBMITTALS

- A. For each coordination drawing, Contractor shall submit his layout to the Architect for record purposes. These drawings shall be a composite drawing consisting of the contractor's layouts superimposed on the architectural and structural background drawings. The architectural and structural background drawings shall be screened 30 percent for clarity. Submit after the initial layout is complete of all trades.
- B. With the initial layout submittal identify all deviations to the Contract Documents to avoid structures and other utilities to be fully coordinated. Identify all conflicts and obtain solutions to conflicts from subcontractors and then incorporate them into the final layout submittal.
- C. Make a final layout submittal following the same requirements described in the initial layout submittal above.
- D. Schedule Coordination Shop Drawings preparation and submittals very early in the Project Schedule so any conflicts can be resolved.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01 32 00
CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Startup construction schedule.
 - 2. Contractor's construction schedule with cash flow forecast.
 - 3. Construction schedule updating reports.
 - 4. Daily construction reports.
 - 5. Material location reports.
 - 6. Site condition reports.
 - 7. Special reports.
 - 8. Field Report Responses
 - 9. Special Inspector's Report Responses, if required
- B. Related Sections:
 - 1. Drawings and general provisions of Contract, including General Conditions and Division 01 Specification sections, apply to Work of this section.

1.02 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
- B. Cost Loading: The allocation of the schedule of values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum unless otherwise approved by Architect.
- C. Event: The starting or ending point of an activity.
- D. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time belongs to Owner as needed to meet schedule milestones and Contract completion date.
 - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
 - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- E. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.
- F. Fragnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.
- G. Major Area: A story of construction, a separate building, or a similar significant construction element.
- H. Network Diagram: A graphic diagram of a network schedule, showing activities and activity relationships.

1.03 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
 - 1. Working electronic copy of schedule file, where indicated.

2. Electronic file of Field Report where indicated.
 3. One paper copy to the Owner and one to the Architect, unless noted otherwise.
- B. Contractor's Startup Construction Schedule: Prior to the first Application for Payment, submit an initial schedule, of size required to display entire schedule for entire construction period.
1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label. "Project Name: _____" "Date: _____" "Owner's Project Number: _____"
- C. Contractor's Construction Schedule: Prior to the submission of the second Application for Payment, submit 3 opaque copies of the construction schedule, large enough to show the entire schedule for the duration of the project. Provide monthly updates thereafter to coincide with subsequent Applications for Payment.
- D. Construction Schedule Updating Reports: Submit with Applications for Payment.
- E. Cash Flow Report that is updated monthly.
- F. Special Reports: Submit two (2) copies at time of unusual event.
- G. Field Report Responses: Submit electronically in excel format in the space provided on form provided in the Forms Section.

1.04 QUALITY ASSURANCE

- A. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's construction schedule, including, but not limited to, the following:
1. Review software limitations and content and format for reports.
 2. Verify availability of qualified personnel needed to develop and update schedule.
 3. Discuss constraints, including phasing, work stages, area separations, interim milestones and partial Owner occupancy, if applicable.
 4. Review delivery dates for Owner-furnished products.
 5. Review schedule for work of Owner's separate contracts.
 6. Review submittal requirements and procedures
 7. Review time required for review of submittals and resubmittals.
 8. Review requirements for tests and inspections by independent testing and inspecting agencies.
 9. Review time required for Project closeout and Owner startup procedures, including commissioning activities.
 10. Review and finalize list of construction activities to be included in schedule.
 11. Review procedures for updating schedule.

1.05 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. Coordinate Contractor's construction schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.
1. Secure time commitments for performing critical elements of the Work from entities involved.
 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 – PRODUCTS

2.01 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of final completion.
1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

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- B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
1. Activity Duration: Define activities so no activity is longer than twenty (20) days, unless specifically allowed by Owner.
 2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 3. Submittal Review Time: Include review and resubmittal times indicated in Section 01 33 00 – Submittal Procedures in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
 4. Startup and Testing Time: Include no fewer than fifteen (15) days for startup and testing.
 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
 6. Punch List and Final Completion: Include not more than ten (10) days for completion of punch list items and final completion.
 7. Include dates for inspections by Authorities Having Jurisdiction.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
1. Phasing: Arrange list of activities on schedule by phase.
 2. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 3. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Section 01 11 00 – Summary of Work. Delivery dates indicated stipulate the earliest possible delivery date.
 4. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use of premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
 5. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.
 - d. Mockups.
 - e. Fabrication.
 - f. Sample testing.
 - g. Deliveries.
 - h. Installation.
 - i. Tests and inspections.
 - j. Adjusting.
 - k. Curing.
 - l. Building flush-out.
 - m. Commissioning.
 - n. Startup and placement into final use and operation.
 6. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
 - a. Structural completion.
 - b. Temporary enclosure and space conditioning.
 - c. Permanent space enclosure.

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- d. Completion of mechanical installation.
 - e. Completion of electrical installation.
 - f. Substantial Completion.
 - g. Final Completion
- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.
- E. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.
 - 1. See Section 01 29 00 – Payment Procedures for cost reporting and payment procedures.
 - 2. Each Activity cost shall reflect an accurate value subject to approval by Owner.
 - 3. Total cost assigned to activities shall equal the total Contract Sum.
- F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
 - 1. Unresolved issues.
 - 2. Unanswered Requests for Information.
 - 3. Rejected or unreturned submittals.
 - 4. Notations on returned submittals.
 - 5. Pending modifications affecting the Work and Contract Time.
- G. Recovery Schedule: When periodic update indicates the Work is seven (7) or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.
- H. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.
 - 1. Use one of the we-based software programs indicated in Section 01 31 00 – Project Coordination.

2.02 STARTUP CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Submit startup, horizontal, bar-chart-type construction schedule within seven (7) days of date established for the Notice to Proceed, but prior to the first Application for Payment.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first sixty (60) days of construction. Include skeleton diagram for the remainder of the Work.

2.03 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's construction schedule within fourteen (14) days of date established for the Notice to Proceed. Base schedule on the startup construction schedule and additional information received since the start of Project.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
 - 1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in ten (10%) percent increments within time bar.

2.04 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 - 1. List of subcontractors at Project site.
 - 2. List of separate contractors at Project site.
 - 3. Approximate count of personnel at Project site.
 - 4. Equipment at Project site.

5. Material deliveries.
 6. High and low temperatures and general weather conditions, including presence of rain or snow.
 7. Accidents.
 8. Meetings and significant decisions.
 9. Unusual events (see special reports).
 10. Stoppages, delays, shortages, and losses.
 11. Meter readings and similar recordings.
 12. Emergency procedures.
 13. Orders and requests of authorities having jurisdiction.
 14. Change Orders received and implemented.
 15. Construction Change Directives received and implemented.
 16. Services connected and disconnected.
 17. Equipment or system tests and startups.
 18. Partial completions and occupancies.
 19. Substantial Completions authorized.
 20. Visitors, including regulatory agencies.
- B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:
1. Material stored prior to previous report and remaining in storage.
 2. Material stored prior to previous report and since removed from storage and installed.
 3. Material stored following previous report and remaining in storage.
- C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.05 SPECIAL REPORTS

- A. General: Submit special reports directly to Owner within one day of an occurrence of an incident that resulted in bodily injury or property damage. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

2.06 FIELD REPORT RESPONSES

- A. Within one week of receipt of Field Reports, provide Contractor's written response to Owner and Architect. Respond in excel format in the space provided on the Field Report Form in the Forms Section.

2.07 SPECIAL INSPECTOR'S REPORT RESPONSES

- A. Within one week of receipt of Special Inspector's Reports provide Contractor's written response to Special Inspector, Owner Architect. Respond in format as prescribed by the Special Inspector.

2.08 CASH FLOW REPORT

- A. Submit Cash Flow Reports that are based upon the cost loaded schedule. Submit Cash Flow Reports concurrently with each Application for Payment. Cash Flow report shall reflect actual historical cost corresponding to previously approved Applications for Payment.

PART 3 – EXECUTION

3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule before the last regularly scheduled progress meeting that precedes the submission of the Application for Payment
 - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 - 3. As the Work progresses, indicate final completion percentage for each activity.
 - 4. Maintain original schedule and any subsequent updates as separate active files until project completion.
 - 5. Schedule update shall show progress on activities as separate progress basis. Do not adjust/change proposed overall start or completion dates without consent of the Owner.
 - 6. Contractor shall sign off on the base schedule and updates. By signing the schedule, the Contractor is committing the resources to follow the schedule. In signing the schedule, Contractor is not necessarily accepting the events or causes that have resulted in the updated schedule. If contractor refuses to sign the schedule, they shall submit an alternate schedule for all activities to the Owner and other prime contractors within 48 hours. Failure to sign the schedule and offer a viable alternative schedule shall result in the non-signatory contractor(s) being responsible for any schedule ramifications for delays to the Owner, and other contractors.
- B. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
 - 1. When revisions are made, distribute updated schedules to the same parties. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements for submittals required for performance of the Work which consist of the following: Contractor's Construction Schedule, schedule of values, product list, shop drawings, product data, samples, manufacturer's instructions and manufacturer's certificates.
- B. Related Sections:
 - 1. Refer to other Division 01 sections and other Contract Documents for specifications on administrative, non-work-related submittals. Such submittals include, but are not limited to the following items:
 - a. Contractors Construction Schedule
 - b. List of Subcontractors.
 - c. Schedule of Values
 - d. Schedule of Materials and Equipment
 - e. Certificate of Insurance and Worker's Compensation Certificate.
 - f. Application for payment.
 - g. Permits.
 - h. Inspection certificates and test reports.
 - i. Items required to be submitted prior to final payment and release of retainage.
 - 2. Section 01 77 19 – Closeout Requirements: Requirements for closeout submittals.

1.02 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.
- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.03 ELECTRONIC SUBMITTAL PROCEDURES

- A. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
 - 1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 - 2. Transmittal Form for Electronic Submittals: Use electronic form provided by the Architect.
- B. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
 - 1. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

2. If established for the project, post electronic submittals as PDF electronic files directly to Architect's FTP site. Notify Architect in email when submittals are posted to the FTP site.
3. All submittals are to be submitted electronically except for samples, color charts, and small mockups.

1.04 GENERAL SUBMITTAL PROCEDURES

- A. Coordinate preparation and processing of submittals with performance of construction activities. To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for resubmittals. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.
- B. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity. Shop drawing and product data submittals are not required for specific products named in the specification as approved products or "Standards" unless otherwise specifically required in a specifications section.
- C. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination. The Architect will withhold action on a submittal requiring coordination with other submittals until all related submittals are received. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.
- D. Prepare each submittal appropriately for transmittal and handling. Transmit each submittal from the Contractor to the Architect using the established transmittal form. The Architect will not accept submittals received from sources other than the Contractor.
- E. Each submittal shall include (1) electronic Submittal Cover Sheet. The Submittal Cover Sheet does not replace the required use of transmittals. The Architect will furnish each Contractor an electronic file of the required Submittal Cover Sheet. All submittals including product data and certifications, color charts, shop drawings, samples, and mock-ups each require a Submittal Cover Sheet.
 1. The following will be included on the Submittal Cover Sheet provided by the Architect: Contractor's name and Project title, the Contractor's and Architect's submittal stamps.
 2. Electronically enter the following on the Submittal Cover Sheet.
 - a. Project name.
 - b. Date.
 - c. Name and address of Architect.
 - d. Architect's project number
 - e. Submittal Number. Submittals are to be numbered consecutively. The Architect will provide numbering instruction at the time the electronic file is forwarded to the contractor. If re-submittals are necessary, the original submittal number is used along with the suffix R1, R2, etc.
 - f. Name of Contractor/ Subcontractor/ Supplier
 - g. Name of firm or entity that prepared submittal.
 - h. Category and type of submittal.
 - i. Specification Section number and title.
 - j. Specification section, article and paragraph reference; Drawing reference number and detail references, as appropriate.
 - k. Item(s) Submitted. Provide specific information. (Example: Product data for all plumbing fixtures with the exception of fixture supports).
 - l. Location(s) where product is to be installed, as appropriate.
 - m. Indication of full or partial submittal.
 - n. Additional Information or Proposed Deviation: The Contractor is required to specifically identify a proposed deviation contained in a submittal. (Example: Scheduled product is discontinued. Product submitted is the current model #.)
 - o. Other necessary identification.
- F. Additional requirements for submittals are:
 1. The Contractors markings on the submittals shall be made in the color green. This does not apply to information on the cover sheet.

2. Submittals that are marked by the Architect as “Not Approved” or “revise and Resubmit” will be returned to the Contractor. Revise and resubmit submittals. Identify all changes made since previous submittal.
 3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.
 4. In addition to the above, clearly indicate the following:
 - a. Relation to adjacent structure or materials.
 - b. Field dimensions, clearly identified as such.
 - c. Product or material conformance with applicable standards, such as ASTM standard or Federal Specification.
 5. Give 5 working days' notice to Architect for delivery of shop drawings.
 6. Allow fifteen (10) working days for review by the Architect. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
- G. Transmit under a separate cover sheet each material, product, equipment or assembly required in a specification section. Submittals grouping two or more types of unrelated systems or assemblies or submittals from more than a single specification section will not be reviewed and will be returned to the Contractor. Sequentially number the transmittal forms. Re-submittals to have original number with an alphabetic suffix.
- H. Apply Contractor's stamp, signed with signature, certifying that review, verification of products required, field dimensions, adjacent construction Work, and coordination of information are in accordance with the requirements of the Contract Documents.
- I. Schedule submittals to expedite the Project and deliver to Architect at business address. Coordinate submission of related items.
- J. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.
- K. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- L. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

1.05 SUBMITTAL TYPES

- A. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- B. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- C. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- D. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- E. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- F. Product Test Reports: Submit written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

- G. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- H. Field Test Reports: Submit reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- I. Maintenance Data: Comply with requirements specified.

1.06 AFFIXING REVIEW STAMP

- A. Separate Line Items: Affix an image of the Review Stamp to each separately-reviewable item of the submittal package. For example:
 - 1. On each separate Shop Drawing sheet, affix a Review Stamp image.
 - 2. For each separate item appearing on a Contract Document schedule, affix a separate Review Stamp image. For example: lighting fixture; plumbing fixture.
 - 3. For each separate type of a product identified for the specified item, affix a separate Review Stamp image. For example, glass type; masonry unit type; metal panel type.
- B. When affixed, the Review Stamp shall not obscure information contained in the submittal.
- C. Fill in name of Contractor and Contractor's project or contract number, if not already entered on stamp.
- D. In the section of the stamp titled "Contractor Action," fill in the following information:
 - 1. Section number of the Specification Section for which the submittal is being made, and Paragraph number of specific submittal requirement within the Section. Do not include items from more than one Specification Section on one form.
 - 2. Submittal number: Refer to Submittal Form Instructions for submittal numbering.
 - 3. Item number as shown on the Submittal Form.
 - 4. Date submitted by Contractor.
 - 5. Mark to signify whether item is Shop Drawing, Product Data, or Sample, or, if 'Other,' enter descriptive words on the blank line.
 - 6. Signature of authorized representative of the Contractor who has performed the Contractor's review and approval of the submittal item, and the date.

1.07 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule as part of the bid submittal. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and Owner and additional time for handling and reviewing submittals required by those corrections. Coordinate dates of submittal with Architect. Architect will comment on multiple submittals occurring at the same time. Make revisions per Architect's comments.
 - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
 - 2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
 - 3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
 - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
 - 4. Format: Arrange the following information in a tabular format:
 - a. Scheduled date for first submittal.
 - b. Specification Section number and title.
 - c. Submittal category: Action; informational.
 - d. Name of subcontractor.

- e. Description of the Work covered.
 - f. Scheduled date for Architect's and Owner's final release or approval.
 - g. Scheduled date of fabrication.
 - h. Scheduled dates for purchasing.
 - i. Scheduled dates for installation.
 - j. Activity or event number.
- B. Submittal Format: Submit a sample transmittal and template for each submittal type with standardized cover sheet to the Owner for approval as part of the bid submittal.

1.08 PROPOSED PRODUCT SCHEDULE

- A. Within 10 days after execution of the Agreement, submit schedule of major products proposed for use. Prepare schedule in tabular form showing each product proposed for use in the Work. Include the manufacturer's name and proprietary product names for each item listed.
- 1. Coordinate the product list with the list of proposed materials manufacturers.
 - 2. Prepare the product schedule with information on each item tabulated under the following column headings:
 - a. Related specifications section number.
 - b. Generic name used in Contract Documents.
 - c. Proprietary name, model number and similar designations.
 - d. Manufacturer's name and address.
 - e. Supplier's name and address.
 - f. Installer's name and address.
 - g. Projected delivery date or time span of delivery period.
 - 3. Provide a written explanation for omissions of data and for known variations from Contract requirements.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation and reference standards.
- C. Submit proposed Product Schedule in PDF electronic file format.

1.09 ELECTRONIC DOCUMENTS

- A. The Architect will, at his sole discretion and without obligation, make graphic portions of the contract documents available for use by the Contractor in electronic format for Contractors' use in preparing submittals. These electronic documents are available in the .DXF or .DWG format for AutoCAD (current release), at no cost.
- 1. All dimensions, verbiage and statistical information will/may be removed.
 - 2. Use of these electronic documents is solely at the Contractors' risk, and shall in no way alter the Contractor's responsibilities under the contract for construction.
 - 3. The Architect will not be responsible or liable for errors, defects, inexactitudes, or anomalies in the data, information, or documents (including drawings and specifications) caused by the Architect's or his consultants' computer software or hardware defects or errors; the Architect's or his consultants' electronic or disk transmittal of data, information or documents; or the Architect's or his consultants' reformatting or automated conversion of data, information or documents electronically or disk transmitted from the Architect's consultants to the Architect.
 - 4. Execute a data licensing agreement in the form of AIA Document C106, Digital Data Licensing Agreement.

1.10 ELECTRONIC RECORD DRAWINGS SUBMITTALS

- A. The Architect will release the computer drawing files at no cost to the Contractor for the purpose of the Contractor(s) returning these as Record Documents. At completion of work, the submit As-Built / Record Drawings to the Architect in electronic AutoCAD .dwg format and one set of marked-up Record Prints. Electronic drawings shall be submitted in .dwg format. The following file formats are not acceptable formats (.tif, .jpg, .jpeg, .pdf).
- B. Refer to "AIA Document C106, Digital Data Licensing Agreement" contained in this Project Manual.

1.11 SHOP DRAWINGS

- A. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data. For drawings requiring large details, submit the required number of hardcopy prints required, two (2) print sets will be retained by the Architect. Shop drawings 24 inches by 36 inches or larger must be submittal in addition to a PDF electronic file.
- B. Shop drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:
 - 1. Identification of products and materials included by sheet and detail number.
 - 2. Dimensions.
 - 3. Compliance with specified standards.
 - 4. Notation of coordination requirements.
 - 5. Notation of dimensions established by field measurement.
 - 6. Relationship and attachment to adjoining construction clearly indicated.
 - 7. Seal and signature of professional engineer if specified.
- C. Coordination drawings are a special type of shop drawing that show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or function as intended.
 - 1. Preparation of coordination drawings is specified in Section 01 31 00 – Project Management and Coordination, and may include components previously shown in detail on shop drawings or product data.
- D. After review, reproduce and distribute in accordance with “Submittal Procedures” above.
- E. Submit shop drawings in PDF electronic file format.

1.12 PRODUCT DATA

- A. Collect product data into a single submittal for each element of construction or system. Product data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where product data must be specially prepared because standard printed data is not suitable for use, submit as "shop drawings." Do not submit product data until compliance with requirements of the Contract Documents has been confirmed.
- B. Mark each copy to show which products and options are applicable. Where printed product data includes information on several products that are not required, mark copies to indicate the applicable information. Include the following information as applicable:
 - 1. Manufacturer's catalog cuts
 - 2. Manufacturer's product specifications
 - 3. Standard color charts
 - 4. Statement of compliance with specified referenced standards.
 - 5. Testing by recognized testing agency.
 - 6. Application of testing agency labels and seals.
 - 7. Availability and delivery time information.
 - 8. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams showing factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
- C. Illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the work.
 - 1. The data shall be supported by sufficient descriptive material, such as catalog cuts, diagrams, and other data published by the manufacturer, as well as by evidence of compliance with performance standards, to demonstrate conformance to the Specification requirements.
 - 2. Catalog numbers alone are not acceptable.

3. The data shall include, but shall not be limited to, the name and address of the nearest service and maintenance organization that regularly stocks repair parts. No consideration shall be given to partial lists submitted unless otherwise noted.
 4. Review of materials and equipment is tentative, subject to submission of complete shop drawings indicating compliance with the Contract Documents.
 5. Cross out information which is not applicable to the work.
 6. Supplement standard information to provide additional information which is applicable to the work.
 7. Show dimensions and clearances required.
 8. Show performance characteristics and capacities.
- D. Do not proceed with installation until a copy of product data is in the Installer's possession.
- E. Submit Product Data before or concurrent with Samples.
- F. Submit Product Data in PDF electronic file format.

1.13 SAMPLES

- A. Submit the required number of physical samples required, the Architect will retain a minimum of two (2) physical Samples, remainder will be returned unless otherwise provided. Cure and finish samples as specified and physically identical with the material or product proposed.
- B. Samples may include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing colors, texture and pattern. Illustrate functional and aesthetic characteristics of materials, equipment, or workmanship, with integral parts and attachment devices. Coordinate sample submittals for interfacing Work.
- C. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
- D. Mount, display, or package samples in the manner to facilitate review of quantities indicated. Prepare samples to match the Architect's sample when applicable. Include the following information attached with label on unexposed side of Samples and include the following:
1. Generic description of the sample.
 2. Specification section number and paragraph number reference.
 3. Sample source.
 4. Product name or name of manufacturer.
 5. Compliance with recognized standards.
 6. Availability and delivery time.
- E. Samples for Inclusion in the Work: If samples are expensive or are complete assemblies suitable for inclusion in the work, e.g., precast concrete panels, locksets and door closers, laboratory or other equipment; approved samples may be installed in the work, provided the location of these items is made known to the Architect.
- F. Submit samples for review of size, kind, color, pattern, and texture, for a final check of these characteristics with other elements, and a comparison of these characteristics between the final submittal and the actual component as delivered and installed. Where finishes are not indicated as custom, provide full range of manufacturers' standard finishes.
- G. Where variation in color, pattern, texture or other characteristic is inherent in the material or product represented, submit at least 3 multiple units that show approximate limits of the variations.
- H. Refer to other Specification sections for requirements for samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation and similar construction characteristics.
- I. Reviewed samples which may be used in the Work are indicated in individual specification sections.
- J. Disposition: Maintain sets of approved Samples at Project site, available for quality- control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
- K. Furnish additional certification of conformance to the specification requirements as may be requested by the Architect.

1.14 QUALITY ASSURANCE SUBMITTALS

- A. Submit quality control submittals, including design data, certifications, manufacturer's instructions, manufacturer's field reports, and other quality-control submittals under other sections of the specifications.
- B. Where other sections of the Specifications require certification that a product, materials, or installation complies with specified requirements, submit a notarized certifications from the manufacturer certifying compliance with specified requirements.
 - 1. Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the company.
- C. Coordination Drawing Submittals: Comply with requirements specified in Section 01 31 00 – Project Management and Coordination.
- D. Contractor's Construction Schedule: Comply with requirements specified in this section.
- E. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 01 45 00 – Quality Requirements.
- F. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 01 77 19 – Closeout Requirements.
- G. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- H. Certificates:
 - 1. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
 - 2. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
 - 3. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
 - 4. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- I. Reports:
 - 1. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
 - 2. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
 - 3. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - a. Name of evaluation organization.
 - b. Date of evaluation.
 - c. Time period when report is in effect.
 - d. Product and manufacturers' names.
 - e. Description of product.
 - f. Test procedures and results.
 - g. Limitations of use.
 - 4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
 - 5. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation

of product. Include written recommendations for primers and substrate preparation needed for adhesion.

6. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
7. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

1.15 DELEGATED-DESIGN SERVICES

- A. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- B. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- C. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally-signed PDF electronic file and paper copy of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 CONTRACTOR RESPONSIBILITIES

- A. Submittals of shop drawings, product literature or data, samples, etc., shall be made for complete assemblies or units of the Work. Submittals which represent only a portion of a part of a larger assembly or unit of work is not acceptable and will be rejected by the Architect.
- B. Check shop drawings, project data and samples prior to submission. Shop drawings not indicating evidence of checking by Contractor will be returned without review by the Architect. No time extensions will be permitted for this type of resubmittal.
- C. All submittals must bear a stamp indicating that the Contractor has reviewed the submittal prior to forwarding to the Architect, or they will be returned to the Contractor without action.
- D. Coordinate each submittal with requirements of the Work and of Contract Documents.
- E. The Contractor is not relieved of responsibility for errors or omissions in shop drawings, product data, samples or similar submittals by Architect's approval thereof.
- F. The Contractor is not relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of shop drawings, product data, samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and the Architect has given written approval to the specific deviation.
- G. Notify Architect, in writing at time of submission, of deviations in submittals from requirements of Contract Documents.

- H. Begin no work which requires submittals until return of submittals with Architect's stamp and initials or signature indicating review.
- I. Materials or equipment installed prior to the required shop drawing, product data, or sample approval shall be subject to removal and replacement by the Contractor at no additional cost to the Owner, if in the opinion of the Architect, such materials or equipment do not meet the requirements of the Contract Documents.
- J. No xerographic or altered xerographic reproductions of the Contract Documents are permitted as submittals. Facsimiles or copies of facsimiles are not acceptable submittals to be furnished under this section.

3.02 ARCHITECT'S ACTION

- A. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action, as follows:
 - 1. Approved
 - 2. Approved as Noted
 - 3. Revise and Resubmit.
 - 4. Submit Additional Information
 - 5. Rejected
 - 6. Not Required for Review
- B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- C. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
- D. Review of submittals is not for the purpose of determining the accuracy or completeness of details, dimensions, or quantities, or for substantiating instructions for installation or performance of equipment or systems.
- E. Architect's review is not for approval of safety precautions or of construction means, methods, techniques, sequences, or procedures.
- F. Approval of a specific item shall not indicate approval of an assembly of which the item is a component.
- G. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
- H. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- I. Submittals not required by the Contract Documents may be returned by the Architect without action.

END OF SECTION



ARCHITECTURE. INSPIRED.

COMPUTER FILE RELEASE APPLICATION & ELECTRONIC RECORD DRAWINGS AGREEMENT

COMPANY NAME & ADDRESS: [COMPANY NAME]

[Date]

[Address]

[Phone]

APPLICANT NAME / TITLE:

[Name / Title]

[Email Address]

PROJECT:

[Project Name & No. (If Appl.)]

Schooley Caldwell will release the computer files to the Contractor. At completion of work, the Contractor agrees to submit As-Built / Record Drawings to Schooley Caldwell in AutoCAD/REVIT® electronic file formats and one set of marked-up Record Prints. The following file formats will not be accepted as AutoCAD .dwg files: .tif, .jpg, .jpeg, or .pdf.

[LIST FILES HERE]

Upon receipt by Schooley Caldwell of this approved application, Schooley Caldwell will produce electronic files containing the Architectural "Base" file including walls, doors, and windows, but excluding notes, dimensions, borders, and engineering content. These files are to provide a background for contractors and **are not** exact copies of the bid set or any other set.

Any use or reuse of the original or altered files by the Applicant or others will be at the Applicant's sole risk and full legal responsibility. Furthermore, the Applicant will, to the fullest extent permitted by law, indemnify and hold Schooley Caldwell harmless from any and all claims, suits, liability, demands or costs arising out of or resulting there from.

REQUESTED BY:

Contractor Signature

DATE:

Authorization for use of Schooley Caldwell computer files must be approved in writing by Schooley Caldwell. Unauthorized use or copying of Schooley Caldwell computer files is not permitted.

SCHOOLEY CALDWELL AUTHORIZATION:

APPROVED BY:

Signature

DATE:

c: [Names or delete this line if no one copied]

300 Marconi Boulevard
Columbus, Ohio 43215

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SECTION 01 35 91
SPECIAL PROCEDURES FOR HISTORIC TREATMENT

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section includes special procedures for historic treatment on Project including, but not limited to, the following:
 - 1. Historic removal and dismantling.
 - 2. Storage and protection of existing historic materials.
 - 3. Temporary protection of historic materials during construction.
 - 4. Protection during application of chemicals.
 - 5. Protection during use of heat-generating equipment.
 - 6. Historic treatment procedures.
- B. This specification applies to all tasks when they are used on Historic Buildings or Historic Sites.
- C. Related Section:
 - 1. Section 01 42 00 – Reference Standards and Definitions: General definitions

1.02 REFERENCES AND STANDARDS

- A. Publications listed below shall be the most recent issue and will form a part of this Specification to extent referenced. Publications are referred to in text by designation only.
- B. Protection of Site and Historic Properties
 - 1. All work shall be performed in accordance with the "Secretary of the Interior's Standards for Rehabilitation, "U.S. Department of the Interior, National Park Service, 1995." They can be found at http://www.nps.gov/hps/tps/standguide/rehab/rehab_standards.htm.

1.03 HISTORIC TREATMENT DEFINITIONS

- A. Dismantle: To disassemble and detach items by hand from existing construction to the limits indicated, using small hand tools and small one-hand power tools, so as to protect nearby historic surfaces; and legally dispose of dismantled items off-site, unless indicated to be salvaged or reinstalled.
- B. "Existing to Remain" or "Retain": Existing items of construction that are not to be removed and that are not otherwise indicated to be removed and salvaged, or removed and reinstalled.
- C. Historic: Spaces, areas, rooms, surfaces, materials, finishes, and overall appearance which are important to the successful restoration as determined by the Architect. All exterior and interior spaces areas rooms and surfaces of the building are included in this designation and considered significant.
- D. Match: To blend with adjacent construction and manifest no apparent difference in material type, species, cut, form, detail, color, grain, texture, or finish; as approved by Architect.
- E. Material in Kind: Material that matches existing materials, as much as possible, in species, cut, color, grain, and finish.
- F. Preservation: To apply measures necessary to sustain the existing form, integrity, and materials of a historic property. Work may include preliminary measures to protect and stabilize the property.
- G. Protect: The term "protect" shall mean to cover, enclose, shield or take other designated measures to avoid damage or harm. Items protected will either remain in place, or will be salvaged for re-installation in the Work. The type of protection shall be as specified. Where the type of protection is not specified, items shall be protected from any and all damage, scratches, marking, overspray, dripping, deterioration, or movement from any and all activities scheduled to take place on this Project, and/or would be typical to a Project site such as this one.
- H. Reconstruction: To reproduce in the exact form and detail a building, structure, or artifact as it appeared at a specific period in time.

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- I. Refinish: To remove existing finishes to base material and apply new finish to match original, or as otherwise indicated.
- J. Rehabilitation: To make possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features that convey its historical, cultural, or architectural values.
- K. Re-install: The term "re-install" or "re-installation" shall mean to install a removed, salvaged or stored item or material in the Work.
- L. Repair: To stabilize, consolidate, or conserve; to retain existing materials and features while employing as little new material as possible to return an existing material as closely as possible to its original form, structural integrity and condition. Repair includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials. Within restoration, repair also includes limited replacement in kind, rehabilitation, and reconstruction, with compatible substitute materials for deteriorated or missing parts of features when there are surviving prototypes. Generally, the types of work required to achieve a "repaired" condition are the following:
 - 1. Disassembly of existing components or construction for the purpose of installing new components.
 - 2. Removal of the component or portion of an assembly designated for repair.
 - 3. Preparation of the adjacent surfaces to receive the repair.
 - 4. Installation and securing the repaired component in the assembly.
 - 5. Preparation of the assembly to receive a finish as specified in the finishing or painting specification.
- M. Replace: To duplicate and replace entire features with new material in kind. Replacement includes the following conditions:
 - 1. The term "replace" shall be defined as providing in a former position or place.
 - 2. The term may be combined with such terms as "with existing" or "with new" which define exactly what is to be replaced.
 - a. Duplication: Includes replacing elements damaged beyond repair or missing. Original material is indicated as the pattern for creating new duplicated elements.
 - b. Replacement with New Materials: Includes replacement with new material when original material is not available as patterns for creating new duplicated elements.
 - 3. Refer to individual specification sections for further definition of "replace" as it relates to a specific application or condition.
- N. Replicate: To reproduce in exact detail, materials, and finish unless otherwise indicated.
- O. Remove: The term "remove" shall mean to detach or separate an item, component or assembly from its installed location, and dispose of off-site, unless indicated to be removed and salvaged or removed and reinstalled. Removal shall be accomplished without damage to adjacent materials, components or systems that are to remain. Damage that must be incurred during removal shall be repaired as cutting and patching.
- P. Restore (restoration):
 - 1. The term "restore" shall be defined as a general term for the process of returning a material, component, system or portion of work as nearly as possible to its original form or condition when it was new.
 - 2. The term "restore" when used in a general sense may include the process of 'repair' defined herein.
 - 3. Refer to individual specification sections for further definition of "restore" as it relates to a specific application or condition.
 - 4. Generally, the process involved with "restore" or "restoration" include the following:
 - a. Removal of applied items or materials which are not to be part of the restored work.
 - b. Stripping or other types of removal of surface applied coatings (i.e., paint).
 - c. Modifying the material if it is required to accommodate new work.
 - d. Replacement of portions of components or materials that cannot be restored because of condition, including those that are deteriorated or otherwise damaged. Replacement is typically done with 'dutchmen' in the case of stone repair.
 - e. Reinforcing broken components when this procedure is acceptable in lieu of "repair."
 - f. Tightening and securing open or loose joints.
 - g. Patching or plugging holes or other severe loss of the existing material.

- h. Filling of minor holes, scratches, dents, or other deformation not associated with normal wear and tear.
 - i. Sanding of the repaired surfaces smooth as a result of the restore process, prior to final surface preparation for finishing.
- 5. Minor surface preparation of a reconditioned surface prior to other finishing or painting is not considered part of the “restore” process, and is specified as preparation in the finishing or painting specification.
- 6. It is not the intent of the “restore” process to return a material that shows normal wear to an original “like new” appearance or condition. Rather, such wear is considered a normal part of the use and life of the particular material, and as such does not require “restoring”
- Q. Salvage: The term “salvage” shall mean the removal of items, components, equipment or materials from their installed location, and protection and storage of such items, components, equipment or materials. Salvaged items will be designated either to be re-installed in the Work, stored, or turned over to the Owner or other designated entity, plus such other Work as described.
- R. Stabilize: To apply measures designed to reestablish a weather-resistant enclosure and the structural reinforcement of an item or portion of the building while maintaining the essential form as it exists at present.
- S. Strip: To remove existing finish down to base material unless otherwise indicated.

1.04 ACTION SUBMITTALS

- A. Historic Treatment Program: Prepare a written plan for historic treatment for whole Project, including each phase or process and protection of surrounding materials during operations. Describe in detail materials, methods, and equipment to be used for each phase of work. Show compliance with indicated methods and procedures specified in this and other Sections.
 - 1. Dust and Noise Control: Include locations of proposed temporary dust- and noise-control partitions and means of egress from occupied areas coordinated with continuing on-site operations and other known work in progress.
 - 2. Debris Hauling: Include plans clearly marked to show debris hauling routes, turning radii, and locations and details of temporary protective barriers.
- B. Preconstruction Documentation: Show preexisting conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by Contractor's historic treatment operations.
 - 1. Photographs of Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by historic treatment operations. Submit before work begins.
- C. Alternative Methods and Materials: If alternative methods and materials to those indicated are proposed for any phase of work, provide a written description including evidence of successful use on other, comparable projects, and program of testing to demonstrate effectiveness for use on this Project.

1.05 INFORMATIONAL SUBMITTALS

- A. Construction Schedule for Historic Treatments: Indicate for entire Project the following for each activity to be performed on historic surfaces:
 - 1. Detailed sequence of historic treatment work, with starting and ending dates, coordinated with other known work in progress.
 - 2. Utility Services: Indicate how long utility services will be interrupted.
 - 3. Use of elevator and stairs.
- B. Qualification Data: Division 00 – Bidders Qualifications: Competency of Specialists.

1.06 QUALITY ASSURANCE

- A. In addition to all other requirements all Work of this Section shall be performed under the guidelines of the Secretary of the Interior's *Standards for the Treatment of Historic Properties*. While Work under this Contract is in progress, protect existing building, grounds, contents, and occupants, including those on adjacent property, whether private or public, from damage or harm.

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1. It is the intent of this Section that:
 - a. All work will be done using the gentlest methods available.
 - b. Sound historical materials will not be put at risk due to the work of this section.
- B. Historic Treatment Specialist Qualifications: An experienced firm regularly engaged in historic treatments similar in nature, materials, design, and extent to this work as specified in each section, and that has completed a minimum of five recent projects with a record of successful in-service performance that demonstrate the firm's qualifications to perform this work.
 1. Field Supervisor Qualifications: Full-time supervisors experienced in historic treatment work similar in nature, material, design, and extent to that indicated for this Project. Supervisors shall be on Project site during times that historic treatment work is in progress. Supervisors shall not be changed during Project except for causes beyond the control of the specialist firm.
 2. Worker Qualification: Persons who are experienced in historic treatment work of types they will be performing.
- C. Field Supervisor Qualifications: Full-time supervisors experienced in historic treatment work similar in nature, material, design, and extent to that indicated for this Project. Supervisors shall be on Project site during times that historic treatment work is in progress. Supervisors shall not be changed during Project except for causes beyond the control of the specialist firm.
 1. Worker Qualification: Persons who are experienced in historic treatment work of types they will be performing.
- D. Historic Treatment Preconstruction Conference: Conduct conference at Project site.
 1. General: Review methods and procedures related to historic treatment including, but not limited to, the following:
 - a. Review manufacturer's written instructions for precautions and effects of historic treatment procedures on materials, components, and vegetation.
 - b. Review and finalize historic treatment construction schedule; verify availability of materials, equipment, and facilities needed to make progress and avoid delays.
 - c. Review qualifications of personnel assigned to the work and assign duties.
 - d. Review material application, work sequencing, tolerances, and required clearances.
 - e. Review areas where existing construction is to remain and requires protection.
 2. Removal and Dismantling:
 - a. Inspect and discuss condition of construction to be removed or dismantled.
 - b. Review requirements of other work that relies on substrates exposed by removal and dismantling work.
- E. Fire-Prevention Plan: Prepare a written plan for preventing fires during the Work, including placement of fire extinguishers, fire blankets, rag buckets, and other fire-prevention devices during each phase or process. Coordinate plan for fire-protection equipment and requirements. Include each fire watch's training, duties, and authority to enforce fire safety.
- F. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
 1. Prepare mockups of specific historic treatment procedures specified in other Sections.

1.07 STORAGE AND PROTECTION OF HISTORIC MATERIALS

- A. Existing Historic Materials to Remain: Protect construction indicated to remain against damage and soiling during historic treatment. When permitted, items may be removed to a suitable, protected storage location during historic treatment and cleaned and reinstalled in their original locations after historic treatment operations are complete.

- B. Storage and Protection: When removed from their existing location, store historic materials within a weathertight enclosure where they are protected from wetting by rain, snow, or ground water, and temperature variations. Secure stored materials to protect from theft.
 - 1. Identify removed items with an inconspicuous mark indicating their original location.
 - 2. Secure stored materials to protect from theft.
- C. Removed and Salvaged Historic Materials:
 - 1. Clean salvaged historic items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until delivery to the Project.
 - 4. Transport items as directed. Protect items from damage during transport and storage.
- D. Removed and Reinstalled Historic Materials:
 - 1. Identify, catalog, label, and record removed location of items for reinstallation so they are reinstalled in the same location as they were removed.
 - 2. Repair and clean historic items as indicated and to functional condition for reuse.
 - 3. Pack or crate items after cleaning and repairing; cushion against damage during handling. Label contents of containers.
 - 4. Protect items from damage during transport and storage.
 - 5. 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.

1.08 PROJECT CONDITIONS

- A. Exterior Cleaning and Repairing:
 - 1. Proceed with the work only when forecasted weather conditions are favorable.
 - a. Wet Weather: Do not attempt repairs during rainy or foggy weather. Do not apply primer, paint, putty, or epoxy when the relative humidity is above 80 percent. Do not remove exterior elements of structures when rain is forecast or in progress.
 - b. Do not perform exterior wet work when the air temperature is below 40 deg F (5 deg C).
 - c. Do not begin cleaning, patching, or repairing when there is any likelihood of frost or freezing.
 - d. Do not begin cleaning when either the air or the surface temperature is below 45 deg F (7 deg C) unless approved means are provided for maintaining a 45 deg F (7 deg C) temperature of the air and materials during, and for 48 hours subsequent to, cleaning.
 - 2. Perform cleaning and rinsing of the exterior only during daylight hours.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Survey of Existing Conditions: Record existing conditions by use of measured drawings and preconstruction photographs.
 - 1. Comply with requirements specified in Section 01 32 33 – Photographic Documentation.
- B. Preparation for Removal and Dismantling: Examine construction to be removed or dismantled to determine best methods to safely and effectively perform removal and dismantling work. Examine adjacent work to determine what protective measures will be necessary. Make explorations, probes, and inquiries as necessary to determine condition of construction to be removed or dismantled and location of utilities and services to remain that may be hidden by construction that is to be removed or dismantled.
 - 1. Verify that affected utilities have been disconnected and capped.

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2. Inventory and record the condition of items to be removed and dismantled for reinstallation or salvage.
 3. Before removal or dismantling of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.
 4. Engage a professional engineer to survey 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 as a result of removal and dismantling work.
- C. Anchorages:
1. Remove anchorages associated with removed items.
 2. Dismantle anchorages associated with dismantled items.
 3. In non-historic surfaces, patch holes created by anchorage removal or dismantling according to the requirements for new work.
 4. In historic surfaces, patch or repair holes created by anchorage removal or dismantling according to Section specific to the historic surface being patched.

3.02 PROTECTION, GENERAL

- A. Ensure that supervisory personnel are present when work begins and during its progress.
- B. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.
- C. Temporary Protection of Historic Materials during Construction:
1. Protect existing materials during installation of temporary protections and construction. Do not deface or remove existing materials.
 2. Attachments of temporary protection to existing construction shall be approved prior to installation.
- D. Protect landscape work adjacent to or within work areas as follows:
1. Provide barriers to protect tree trunks.
 2. Bind spreading shrubs.
 3. Use coverings that allow plants to breathe and remove coverings at the end of each day.
 4. Do not cover plant material with a waterproof membrane for more than 8 hours at a time.
 5. Set scaffolding and ladder legs away from plants.
- E. Existing Roofing: Prior to the start of work in an area, install roofing protection as indicated.
- F. Existing Drains: Prior to the start of work or any cleaning operations, test drains and other water removal systems to ensure that drains and systems are functioning properly. Do not begin Work of this Section until the drains are in working order.
1. Provide a method to prevent solids including stone or mortar residue from entering the drains or drain lines. Clean out drains and drain lines that become blocked or filled by sand or any other solids because of work performed under this Contract.
 2. Protect storm drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.

3.03 PROTECTION DURING APPLICATION OF CHEMICALS

- A. Comply with requirements in Section 01 50 00 – Temporary Facilities and Controls.
- B. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm or damage resulting from applications of chemical cleaners and paint removers.
- C. Cover adjacent surfaces with materials that are proven to resist chemical cleaners selected for Project unless chemicals being used will not damage adjacent surfaces. Use covering materials that contain only waterproof, UV-resistant adhesives. Apply masking agents to comply with manufacturer's written instructions. Do not apply liquid masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.
- D. Do not clean surfaces during winds of sufficient force to spread cleaning solutions to unprotected surfaces.

- E. Neutralize and collect alkaline and acid wastes and dispose of off the Owner's property.
- F. Collect and dispose of runoff from chemical operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

3.04 PROTECTION DURING USE OF HEAT-GENERATING EQUIPMENT

- A. Comply with the following procedures while performing work with heat-generating equipment, including welding, cutting, soldering, brazing, paint removal with heat, and other operations where open flames or implements utilizing heat are used:
 - 1. Obtain the Architect's approval for operations involving use of open-flame or welding equipment.
 - a. Notification shall be given for each occurrence and location of work with heat- generating equipment.
 - 2. As far as practical, use heat-generating equipment in shop areas or outside the building.
 - 3. Before work with heat-generating equipment commences, furnish personnel to serve as a fire watch (or watches) for location(s) where work is to be performed.
 - 4. Do not perform work with heat-generating equipment in or near rooms or in areas where flammable liquids or explosive vapors are present or thought to be present. Use a combustible gas indicator test to ensure that the area is safe.
 - 5. Remove and keep the area free of combustibles, including, rubbish, paper, waste, etc., within area of operations.
 - a. If combustible material cannot be removed, provide fireproof blankets to cover such materials.
 - 6. Where possible, furnish and use baffles of metal or gypsum board to prevent the spraying of sparks or hot slag into surrounding combustible material.
 - 7. Prevent the extension of sparks and particles of hot metal through open windows, doors, holes, and cracks in floors, walls, ceilings, roofs, and other openings.
 - 8. Inspect each location of the day's work not sooner than 30 minutes after completion of operations to detect hidden or smoldering fires and to ensure that proper housekeeping is maintained.
- B. Where sprinkler protection exists and is functional, maintain it without interruption while operations are being performed. If operations are performed close to automatic sprinkler heads, shield the individual heads temporarily with guards.

3.05 HISTORIC TREATMENT PROCEDURES

- A. Ensure that supervisory personnel are present when historic treatment work begins and during its progress.
- B. The principal aim of preservation work is to halt the process of deterioration and stabilize the item's condition, unless otherwise indicated. Follow the procedures in subparagraphs below and procedures approved in historic treatment program:
 - 1. Retain as much existing material as possible; repair and consolidate rather than replace.
 - 2. Use additional material or structure to reinforce, strengthen, prop, tie, and support existing material or structure.
 - 3. Use reversible processes wherever possible.
 - 4. Use historically accurate repair and replacement materials and techniques unless otherwise indicated.
 - 5. Use traditional replacement materials and techniques. New work shall be distinguishable to the trained eye, on close inspection, from old work.
 - 6. Record the work before the procedure with preconstruction photos and during the work with periodic digital photographic documentation.
- C. Obtain review and written approval in the form of a Constructive Change Directive or Supplemental Instruction before making changes or additions to construction or removing historic materials.
- D. Notify Architect of visible changes in the integrity of material or components whether due to environmental causes including biological attack, UV degradation, freezing, or thawing; or due to structural defects including cracks, movement, or distortion.

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1. Do not proceed with the work in question until directed by Architect.
- E. Prohibit smoking by personnel performing work on or near historic structures.
- F. Where missing features are indicated to be repaired or replaced, provide features whose designs are based on accurate duplications rather than on conjectural designs, subject to the approval of the Architect.
- G. Where work requires existing features to be removed, cleaned, and reused, perform these operations without damage to the material itself, to adjacent materials, or to the substrate.
- H. Identify new or replacement materials and features with inconspicuous, permanent marks to distinguish them from original materials. Record the legend of identification marks and the locations of these marks on Record Drawings.
- I. When cleaning, match samples of existing materials that have been cleaned and identified for acceptable cleaning levels. Avoid overcleaning to prevent damage to existing materials during cleaning.

END OF SECTION

SECTION 01 35 92 - SPECIAL PROCEDURES ARCHAEOLOGICAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings, Bidding Requirements, Contract Conditions, and Division 1 Specification Sections in their entirety apply to this Section.

1.1 SUMMARY

- A. Section Includes:
 - 1. Procedure to follow during work
 - 2. Procedure to follow in the event of discovery of archaeological artifact(s)
- B. Related Sections
 - 1. Section 01 11 00 Summary of Work

1.2 DEFINITIONS

- A. Artifact: Portable object made or used by people that is over fifty years old.
- B. Feature: Non-moveable physical structure or element made or used by people, such as a hearth, storage pit, wall, floor, post hole, cistern, well, road, path, etc.
- C. Archaeological monitoring: The observation of construction excavations and activities by an archaeologist in order to identify, recover, protect, and/or document archaeological resources.
- D. Project Archaeologist: The archaeologist in charge of the archaeological investigations for the project. This will be an Ohio History Connection employee, or an archaeological consultant hired by Ohio History Connection for the project.
- E. Construction Limit: Project boundaries and limits for construction activities. This area is designated on the Drawings as the "Construction Limit".

1.3 PRE-CONSTRUCTION ARCHAEOLOGY

- A. Since this project is being constructed on a historic site, every effort has been made to preserve important archaeological and historical resources. This may include consultation with the State Historic Preservation Office (SHPO), Federally Recognized Tribes with historic and/or geographic ties to the site, and the National Park Service.
 - 1. Any change in scope during the project must be approved by the Owner and/or the Project Archaeologist prior to implementation to ensure that it adheres to the terms agreed upon during any aforementioned consultation(s). Not doing so can result in the termination of the Contractor.

- B. An archaeological assessment of the project area was conducted prior to the advertisement for bids and the beginning of construction. This assessment identified and evaluated the potential presence of significant archaeological resources within the project area. This may have involved historical research, geophysical surveys, and/or testing to determine the significance and extent of the resources. This information helped shape the mitigation strategies for the project. These strategies may include the Construction Limit, the use of construction matting, defined access road(s), defined staging area(s), archaeological monitoring during construction, and areas of avoidance.
- C. Not all archaeological surveys necessary for the project may have been conducted prior to the start of construction. The Owner will inform the Contractor if other archaeological surveys, including testing and archaeological monitoring, are to occur during construction.
- D. The archaeological assessment and any pre-construction archaeological surveys may not have identified every artifact and/or feature within the Construction Limit. See Section 1.7 PROCEDURES IF ARTIFACT/FEATURE IS FOUND for more information.

1.4 CONSTRUCTION ARCHAEOLOGY

- A. Depending on the results of the archaeological assessment, the Contractor may have to limit all earth disturbing activities to designated areas. These activities include material storage, equipment movement, vehicle parking, and excavations. The Contractor may be required to use a specified type of construction matting to protect the project area, access road(s), and/or staging area(s) from equipment damage. These conditions will be specified in the drawings and reiterated verbally by the Owner to the Contractor prior to the start of construction.
 - 1. Non-compliance to any mitigating specifications, such as those described above, can result in the termination of the Contractor.
- B. Archaeological surveys may need to occur during construction. These surveys may include geophysical surveys, testing, and archaeological monitoring. The Owner will inform the Contractor of these surveys prior to the start of construction when possible.
 - 1. The Contractor cannot start work in or damage areas designated as needing an archaeological survey(s) prior to the survey. Doing so may result in the termination of the Contractor.
 - 2. The Contractor should be aware of potential project delays to allow for archaeological surveys/investigations to be performed.
- C. If features or artifacts are found during construction, further archaeological surveys may be deemed necessary by the Project Archaeologist. The Project Archaeologist and/or Owner will inform the Contractor of these surveys as soon as possible.

1.5 AUTHORITY TO STOP WORK

- A. The Project Archaeologist has the authority to stop construction activities at any time where it appears to the Project Archaeologist that a feature or an artifact is being uncovered or potentially damaged.
- B. The Project Archaeologist has the authority to stop construction activities at any time if the work deviates from the plans provided to them by the Owner.

1.6 OWNERSHIP OF ARTIFACTS

- A. If artifacts or features are uncovered on the site, said resources are the property of the Owner or the State of Ohio. The Contractor shall exercise diligent care not to damage features or uncovered artifacts. The Contractor shall immediately turn artifacts over to the Owner, through the Project Archaeologist.

1.7 PROCEDURE IF ARTIFACT/FEATURE IS FOUND

- A. If human remains are found during the project, follow Ohio History Connection's [American Indian Policy Supplement: Procedures for the inadvertent discovery and disposition of American Indian ancestral human remains, funerary objects, sacred objects, and objects of cultural patrimony in the State of Ohio.](#)
- B. If the Project Archaeologist is not on-site when an artifact is found, the Contractor should collect the artifact and give it to the Owner or Project Archaeologist. If there are several artifacts in one area, stop work immediately and contact the Owner and/or Project Archaeologist. Work in this area cannot resume until authorized by the Project Archaeologist.
 - 1. This procedure can be disregarded if authorized by the Project Archaeologist at any point throughout the project.
- C. If the Project Archaeologist is not on-site when a feature is found, stop work immediately and contact the Owner and/or Project Archaeologist. Work in this area cannot resume until authorized by the Project Archaeologist.
- D. If the Project Archaeologist is on-site, the Project Archaeologist will utilize the following procedure:
 - 1. Stop the excavation operations to investigate if an artifact or feature has been uncovered.
 - 2. If the Project Archaeologist decides that an artifact is uncovered, the Project Archaeologist will collect the object and work will be allowed to continue.
 - 3. If the Project Archaeologist decides that a feature has been uncovered, the Project Archaeologist will notify the Contractor and immediately begin the process of excavating the portion of the feature in the construction zone.
 - a. In most instances, this takes an hour or longer. Other, non-excavation work on the project can continue while the archaeological investigations are taking place.

4. If the uncovered feature or artifact involves more complicated removal techniques, the Project Archaeologist may need to confer with the Owner, Architect, and others with respect to its mitigation. The Project Archaeologist will inform the Contractor of this fact.
 - a. The Contractor shall then immediately cease operations on that portion of the excavation and make every effort to arrange work around the uncovered feature or artifact. Excavation work may need to be halted until an archaeologist is available to monitor the work. Work in this area may not resume until authorized by the Project Archaeologist. This may take several hours or days.
 - b. The requirement for flexibility of the Excavation Schedule should permit this accommodation.
 - c. The Project Archaeologist will make arrangements to excavate the feature and/or process and remove the artifact.
5. In the most complicated case, the feature area may need to be avoided. The Project Archaeologist will work with the Owner and Contractor to decide the best path forward for this aspect of the project in this case.

1.8 DAMAGES

- A. Failure on the part of the Contractor to adhere to these procedures will result in damages being assessed by the Owner against the Contractor. The amount to be assessed will be the cost of restoring those portions of the site damaged and the cost of remediating cultural artifacts, at a minimum. The Contractor may also be terminated from the project.
- B. The Contractor shall be responsible for additional costs as may apply, including but not limited to:
 1. Archaeological remediation and retrieval of artifacts if archaeological resources are damaged due to noncompliance of mitigating specifications. These include matting, designated access roads, designated staging areas, and designated vehicle parking. These specifications will be stated in the drawings and by the Owner prior to the start of construction.
 2. Repair of any damages caused, such as ruts, compaction, and excavation.

PART 2 – NOT USED

PART 3 – NOT USED

END OF SECTION

SECTION 01 43 30
MOCKUPS

PART 1 – GENERAL

1.01 SUMMARY

- A. General: Provide and coordinate mock-up assemblies at Project site for Architect's review and acceptance, in accordance with requirements of the Contract Documents. Refer to individual Specification Sections for mock-up requirements. Generally, without limitation, mock-ups on site include the following:
 - 1. Mockup are full-size, physical example assemblies to illustrate finishes and materials. Mockups are used to verify selections made under Sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples.
- B. Providing mock ups prior to starting final work is an important part of the submittal and approval process. Special attention and advanced scheduling are required for the required mock ups. Furnish and install full size mock ups at the project site for review by the Architect. Furnish and install full size mock ups off site as is necessary for testing purposes.
- C. It shall be the responsibility of the Contractor to coordinate the work of the related Specification Sections so that each mock-up meets the specified requirements.
- D. Related Sections:
 - 1. Drawings and general provisions of Contract, including General Conditions and Division 01 Specification sections, apply to Work of this section.
 - 2. Refer to other Division 01 sections and other Contract Documents for specifications on administrative, non-work-related submittals.

1.02 DEFINITIONS

- A. Mock-up Definition: Full size physical assemblies, construction on site, that incorporate several materials or elements of construction. Mock-ups are erected for Architect's review and approval of exterior and interior visual features and workmanship. Mock-ups represent quality of materials, interface between dissimilar materials and workmanship; approved mockups establish the standard by which the Work will be judged.
- B. Freestanding Mock-Ups: Full-size, physical assemblies that are constructed on-site in a protected location.
 - 1. Freestanding mock-ups are not part of the final construction. Freestanding mock-ups will be used to verify selections made under sample submittals, to demonstrate aesthetic effects, qualities of materials and execution, and to review construction, coordination, testing, and operation.
 - 2. Approved freestanding mock-ups establish the standard by which the Work will be judged.
 - 3. Approved freestanding mock-ups remain on site during the balance of construction and are demolished and removed from site at completion of the Work they represent.
- C. In-Place Mock-Ups: Full-size, physical assemblies that are constructed in-place and remain part of final construction.
 - 1. In-place mock-ups will be used to verify selections made under sample submittals, to demonstrate aesthetic effects, qualities of materials and execution, and to review construction, coordination, testing, or operation.
 - 2. Approved in-place mock-ups establish the standard by which the Work will be judged.
 - 3. Approved mock-ups remain part of the completed Work.

1.03 ACTION SUBMITTALS

- A. Schedule of Mock-Ups: Within fourteen (14) days after receipt of Notice of Award and prior to purchasing of materials, the Contractor shall develop and submit a complete schedule of required mock-ups to the Architect and Owner for review and comment.

1. Mock-up schedule shall be reviewed at each progress meeting, revised and resubmitted as required.
 2. Schedule shall allow sufficient time for mock-ups which are not accepted to be reconstructed and reviewed until accepted by the Architect.
- B. Notification: Notify Architect seven days in advance of dates and times when mockups will be constructed.
- C. Shop Drawings of Mock-Ups: Provide large scale shop drawings for fabrication, installation and erection of all parts of each mock-up. Provide plans, elevations, and details of anchorage, connections and accessory items.
- D. Photographs of Mock-Ups: Submit photographs of mock-ups after completion of installation and acceptance of each mock-up.
- E. Submittal Samples: Refer to individual Specification Sections for submittal requirements of mock-up components and coordinate accordingly.

1.04 QUALITY ASSURANCE

- A. General: Provide In-Place or Stand-Alone mock ups as indicated in and meeting following:
1. Use materials, fabrication and installation methods identical with those indicated for Work. Simulate actual construction conditions as accurately as possible.
 2. Provide mock-ups for start of each assembly required by individual Specification sections at location acceptable to the Architect.
 3. Mock-up coordination drawings and requirements for pre-installation conference: Refer to Section 01 31 00 — Project Coordination for requirements.
 4. Construct mock-ups in accordance with approved mock-up coordination drawings.
 5. Deviations from or additions to details shown are subject to Architect's approval.
 6. Approval:
 - a. Obtain Architect's written approval for each mock-up.
 - b. Do not complete production of materials for final Project site erection until Architect's approval of mock-up has been obtained.
 - c. Approved In-Place mock-ups will become part of finish Work when approved by the Architect and will serve as standard of quality and workmanship of Work.
 - d. Where mock-up is rejected, or testing of mock-up fails to meet performance criteria included under Related Sections, replace, rebuild and or modify mock-up as directed by Architect.
 7. Removal of Mock-Ups: Upon completion of relevant Work, or when directed by the Architect, Contractor shall demolish and remove mock-ups, both stand-a-lone and rejected in place mock-ups, at no additional cost to the Work.
- B. In-Place Mock Up: Provide In-Place mock-up of components identified in the individual technical sections of specifications and as required to fulfill and implement specified requirements for each building component. Mock up shall be used to evaluate the various components, including but not limited to workmanship, weatherability and aesthetic of finishes. Exterior components will include structural and non-structural support framing, cladding, fenestration and flashing assemblies to extent indicated on the drawings. Interior components will include supporting assemblies and trim for finishes as indicated in individual sections.
1. Allow preconstruction conference to take place with all affected installation contractors and materials suppliers.
 2. Review integration of work between the specific specification sections and coordinate details shown on approved fabrication drawings.
 3. Review critical aspects of sequencing and installation of materials required to maintain water-resistant barrier, air-barrier and integrity of exposed and concealed flashings for diverting water to exterior face of envelope.
 4. Determining optimum times for material representative's field services, reports, developing quality control procedures specific to project, and as required to validate respective manufacturer's warranty.
 5. Review procedures for in-situ special inspection testing by installation contractor and third party testing agency in accordance with Section 01 45 00 – Quality Requirements, as applicable.

- C. Stand-Alone Mock-Ups: Provide mock-ups in locations on site approved by Architect and Owner and comply with requirements indicated above for in-place mock-ups.
 - 1. Mock-ups shall remain on site, as the standard for completing the Work, until approved otherwise by the Architect.
 - 2. Remove as indicated above.

PART 2 – PRODUCTS

2.01 MATERIALS AND PRODUCTS

- A. Provide materials, components, and products for mock-ups as specified in individual Specification Sections.

PART 3 – EXECUTION

3.01 GENERAL

- A. Refer to PART 3, EXECUTION portions of the various Specification Sections for specific requirements regarding condition of surfaces, erection, and erection tolerances.

3.02 MOCK-UPS

- A. Provide mock-ups of types and sizes required by individual Specification Sections to evaluate and set the standard of quality for that work. Obtain Architect's acceptance of visual qualities prior to commencing work that individual mock-up is intended to represent. Protect and maintain approved mock-ups throughout the work of the Contract. Locate mock-ups at the Project site as directed by the Architect.
 - 1. Provide as many mock-ups as required until Architect's approval has been received.
 - 2. When indicated in individual Specification Sections, approved mock-ups may be incorporated into the finish work.

3.03 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as non-visible as possible.
- B. Protect construction exposed by or for quality-control service activities.

3.04 REMOVAL AND DISPOSAL

- A. Demolish and remove free-standing mock-ups (if any) from site at the completion of the Project. Legally dispose of demolished mock-up materials. Legally dispose of demolished mock-up materials.

END OF SECTION

SECTION 01 45 00
QUALITY REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-control services required by Architect, Owner's Representative, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Sections include the following:
 - 1. Divisions 02 through 49 Sections for specific test and inspection requirements.

1.02 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction complies with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- D. Mockups: Full-size, physical example assemblies to illustrate finishes and materials. Mockups are used to verify selections made under Sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Mockups establish the standard by which the Work will be judged.
- E. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- F. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- G. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- H. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- I. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- J. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- K. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.03 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.04 INFORMATIONAL SUBMITTALS

- A. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:
 1. Seismic-force-resisting system, designated seismic system, or component listed in the designated seismic system quality-assurance plan prepared by Architect.
 2. Main wind-force-resisting system or a wind-resisting component listed in the wind-force-resisting system quality-assurance plan prepared by Architect.
- B. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

1.05 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
 1. Date of issue.
 2. Project title and number.
 3. Name, address, and telephone number of testing agency.
 4. Dates and locations of samples and tests or inspections.
 5. Names of individuals making tests and inspections.
 6. Description of the Work and test and inspection method.
 7. Identification of product and Specification Section.
 8. Complete test or inspection data.
 9. Test and inspection results and an interpretation of test results.
 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 12. Name and signature of laboratory inspector.
 13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Field Reports: Prepare written information documenting tests and inspections specified in other Sections. Include the following:
 1. Name, address, and telephone number of representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.

4. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 5. Other required items indicated in individual Specification Sections.
- C. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.06 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Factory-Authorized Service Representative Qualifications: An owner or manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- E. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- F. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- G. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
1. Requirement for specialists shall not supersede building codes and similar regulations governing the Work, nor interfere with local trade-union jurisdictional settlements and similar conventions.
- H. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
- I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
1. Contractor responsibilities include the following:
 - a. Provide test specimens representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
 - d. When testing is complete, remove test specimens, assemblies, and mockups, and laboratory mockups; do not reuse products on Project.

1.07 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of the types of testing and inspecting they are engaged to perform.

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2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor. and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Unless otherwise indicated, provide quality-control services specified and required by authorities having jurisdiction.
 1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ the same entity engaged by Owner, unless agreed to in writing by Owner.
 2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a manufacturer's representative to observe and inspect the Work. Manufacturer's representative's services include examination of substrates and conditions, verification of materials, inspection of completed portions of the Work, and submittal of written reports.
- D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.
- E. Testing Agency Responsibilities: Cooperate with Architect, Owner's Representative, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
 1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform any duties of Contractor.
- F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
 1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field-curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
 1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.08 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:
- B. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:
 - 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
 - 2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 - 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
 - 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 - 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 - 6. Retesting and reinspecting corrected work.:

1.09 MOCK-UPS

- A. Refer to Section 01 43 30 – Mockups.

1.10 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. When specified in individual specification Sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, testing, and adjustment as applicable, and to initiate instructions when necessary.
- B. Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- C. Submit report in duplicate within 30 days of observation to Architect for review.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 TEST AND INSPECTION LOG

- A. Prepare a record of tests and inspections. Include the following:
 - 1. Date test or inspection was conducted.
 - 2. Description of the Work tested or inspected.
 - 3. Date test or inspection results were transmitted to Architect.
 - 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.02 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.
 - 2. Comply with the Contract Document requirements for Section 01 73 29 – Cutting and Patching.

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- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes requirements for construction facilities and temporary controls, including temporary utilities, support facilities, and security and protection.
- B. Related Sections include the following:
 - 1. Drawings and general provisions of the Contract, including General Conditions and Division 01 specification sections, apply to work of this section.
- C. Related Documents:
 - 1. Section 01 11 00 – Summary of Work: General requirements and description of project and procedures.

1.02 USE CHARGES

- A. Refer to General Conditions for use charge responsibilities.

1.03 DEFINITIONS

- A. "Maintain" shall mean to keep in service and operation; and to provide such repairs as required to keep in continued service and safe, sound condition until and only if directed by the Architect to be removed.

1.04 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- C. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
- D. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.
 - 1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
 - 2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
 - 3. Indicate sequencing of work that requires water, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
- E. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:
 - 1. Locations of dust-control partitions at each phase of work.
 - 2. HVAC system isolation schematic drawing.
 - 3. Location of proposed air-filtration system discharge.
 - 4. Waste handling procedures.
 - 5. Other dust-control measures.

1.05 DESCRIPTION OF REQUIREMENTS

- A. Provide all materials, labor and related items necessary to complete the Work indicated on the drawings and specified.
- B. Definitions: Specific administrative and procedural minimum actions are specified in this section, as extensions of provisions in General Conditions and other Contract Documents. These requirements have been included for special purposes as indicated. Nothing in this section is intended to limit types and amounts of temporary Work required, and no omission from this section will be recognized as an indication by Architect that such temporary activity is not required for successful completion of the Work and compliance with requirements of Contract Documents.
- C. Provisions of this section are applicable to, but not by way of limitation, utility services, construction facilities, security/protection provisions and support facilities.
- D. Provide and maintain temporary construction facilities and control as specified herein and as required for the progress and completion of the Work. Terminate and remove when no longer required for proper performance of the Work, or when permanent facilities are available for use.
- E. Provide, maintain, and protect temporary construction facilities and controls as specified herein in a manner which does not interfere with the permanent construction; which is safe, non-hazardous, sanitary, and which adequately protects the public, workmen, and the Work.
- F. Provide materials and equipment adequate in capacity for the intended use, which will not create unsafe conditions, and that conform to applicable codes and standards.
- G. Contractors requiring one of the temporary services or controls before it can be provided shall provide such service as suits Contractor's needs at Contractor's own expense.

1.06 QUALITY ASSURANCE

- A. Comply with industry standards and applicable laws and regulation of authorities having jurisdiction including, but not limited to, the following:
 - 1. Building code requirements.
 - 2. Environmental protection regulations.
 - 3. Health and safety regulations.
 - 4. Utility company regulations.
 - 5. Police and fire department rules.
- B. Comply with the following standards:
 - 1. NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations."
 - 2. ANSI A10 Series standards for "Safety Requirements for Construction and Demolition," and ANSI A10.6, NECA's "Temporary Electrical Facilities."
 - 3. Comply with NEMA, NECA, and UL standards and regulation for temporary electrical service. Install service in compliance with NFPA 70 "National Electrical Code."
- C. Standards: Comply with ANSI A10.6, NECA's "Temporary Electrical Facilities," and NFPA 241.
 - 1. Trade Jurisdictions: Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with trade regulations and union jurisdictions.
- D. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- E. Install, operate, maintain and protect temporary facilities in a manner and a location which will be safe, non-hazardous, sanitary and protective of persons and property and free of deleterious effects.
- F. Protect work against damage and maintain work, materials, apparatus and fixtures free from injury or damage in accordance with the General and Special Conditions during the entire construction period. Protect installed work and provide special protection where specified in individual specification sections. Work likely to be damaged shall be covered or protected at the end of each day's work. Work damaged by failure to provide protection required, shall be removed and replaced with new work at the Contractor's expense.

- G. Provide for the security of the existing building during periods when work is not being performed, and at times when the building is exposed to the exterior. Coordinate access barrier locations within the existing buildings which can be secured with a lock to prohibit access during these periods.
- H. Protect existing finished floors and other wearing surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials as specified in this section and as noted on the drawings.

1.07 PROJECT CONDITIONS

- A. Conditions of Use: The following conditions apply to use of temporary services and facilities by all parties engaged in the Work:
 - 1. Keep temporary services and facilities clean and neat.
 - 2. Relocate temporary services and facilities as required by progress of the Work.
 - 3. Temporary facilities and controls shall be removed by the designated Contractor responsible for the temporary facility and/or controls upon completion of the work, unless otherwise indicated.
- B. Prepare a schedule indication dates for implementation and termination of each temporary facility. Establish and initiate use of each temporary facility at time first reasonably required for proper performance of the Work. Terminate use and remove facilities at earliest reasonable time, when no longer needed or when permanent facilities have, with authorized use, replaced the need.
- C. Operate temporary facilities in a safe and efficient manner. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Provide new materials; if acceptable to Architect, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for use intended.
- B. Lumber, General: Comply with DOC PS 20, "American Softwood Lumber Standard," and with applicable grading rules of inspection agencies certified by ALSC's Board of Review.
 - 1. Factory mark each piece of lumber with grade stamp of grading agency.
 - 2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
 - 3. Provide dressed seasoned lumber, S4S, unless otherwise indicated.
 - 4. Provide kiln-dry lumber with 19 percent maximum moisture content at time of dressing for 2-inch nominal thickness or less, unless otherwise indicated.
 - 5. Grade: Construction or No. 2 grade per Section 06 10 00 – Rough Carpentry.
- C. Paint: Comply with requirements of Section 09 91 00 – Painting.
 - 1. For sign panels and applied graphics, provide exterior-grade alkyd gloss enamel over exterior primer.
 - 2. For temporary enclosures, safety barriers and similar uses of exposure to weather, provide exterior-grade plywood painted with acrylic-latex emulsion over exterior primer. Color to be provided by Architect.
- D. Tarpaulins: Provide waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of 15 or less. For temporary weather protection and other uses, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.
- E. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch-OD corner and pull posts, with 1-5/8-inch-OD top and bottom rails. Provide galvanized-steel bases for supporting posts.
- F. Fasteners: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacturer.

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1. Bolts: Steel bolts complying with ASTM A307, Grade A; with ASTM A563 hex nuts and, where indicated, flat washers.
2. Lag Bolts: ASME B18.2.1.
3. Wood Screws: ASME B18.6.1.
4. Nails, Wire, Brads and Staples: FS FF-N-105.

2.02 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly.
- C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

2.03 EQUIPMENT

- A. Provide new equipment; if acceptable to Architect, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.
- B. First Aid Supplies: Comply with governing regulations.
- C. Fire Extinguishers: Provide hand-carried, portable UL-rated, class "A" fire extinguishers for temporary offices and similar spaces. In other locations provide hand-carried, portable, UL-rated, class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.
 1. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.

2.04 TEMPORARY FLOOR AND WALL PROTECTION

- A. Acceptable Manufacturer: Ram Board, 27460 Avenue Scott; Valencia, CA 91355; Tel: 855-848-8678; Web: www.ramboard.com
- B. Ram Board: Model # RB 38-100 Ram Board as manufactured by Ram Board. Heavy-duty temporary and reusable floor and wall protection.
 1. Standards Compliance: FSC certified. Recycled and recyclable materials.
 2. Wall Guard Feature: Fold lines allowing corner, horizontal and vertical wall protection.
 - a. Wall guard fold lines at 4 inches (101 mm), 8 inches (203 mm) and 12 inches (305 mm) from edge of board.
 3. Flex-Fiber Technology: Provides unmatched protection from impact while remaining flexible.
 4. Vapor-Cure Technology: Allows protected substrates and finishes to cure while being protected so work may continue.
 5. Spill Guard Technology: Provides added protection against water, paint, mud, and more.
 6. Material Thickness: 46 mils (1.17 mm).
 7. Roll Dimensions (W x L): 38 in x 100 ft
- C. Seaming Tape: Model # RT 3-164 as manufactured by Ram Board. Used to cover Ram Board seams.
 1. Backing: Unique kraft backing tears easily and creates an extremely durable, smooth finish.
 2. Recyclable: 100 percent.
 3. Dimensions (W x L): 3 in x 164 ft

PART 3 – EXECUTION

3.01 INSTALLATION, GENERAL

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

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1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
- C. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.02 TEMPORARY WATER

- A. Coordinate with local utility and connect to main at street. Provide temporary meters and extend service to central location on site.
- B. Install water service and distribution piping of sizes and pressures adequate for construction until permanent water service is in use. Furnish and install temporary risers, hose bibbs, and other items required for temporary service. Protect temporary water service from damage and freezing.
 1. Sterilization: Sterilize temporary water piping before use.
 2. Transport water from water service location to point of use and coordinating use with other trades.
 3. Provide permanent main water service throughout new facility as soon as practical to distribute water for sanitary and construction purposes.
- C. Owner will pay the cost of water used during construction period.

3.03 TEMPORARY ELECTRICAL SERVICE FOR POWER AND LIGHTING

- A. Provide labor and material for installation and maintenance of temporary light and power for construction purposes for all trades including cost of running or extending temporary service from the utility supply.
 1. Arrange and pay for temporary pole line construction, if required, from the public utility.
- B. Furnish the necessary extension cords for temporary electric and lighting to properly service the Contractor's requirements. Contractors shall be responsible for the proper use and maintenance of their cord sets and cord-and-plug connected equipment. Do not fasten to stone or decorative floor or wall finishes.
- C. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, and inspections.
 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
- D. Complete all work in conformance with requirements of the National Electric Code, OSHA, and the Authority Having Jurisdiction.

3.04 TEMPORARY HEATING AND COOLING

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

3.05 TEMPORARY SANITARY FACILITIES

- A. Sanitary facilities include temporary toilets, wash facilities, and drinking water fixtures. Comply with regulations and health codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install where facilities will best service project needs.
- B. Provide temporary portable self-contained chemical type toilets, acceptable to public health authorities, quantity equal to one toilet for each 25 men/women on project. Computation of men/women present includes men/women of each Contractor, and Architect's and Owner's personnel. Shield toilets to ensure privacy. Locate temporary toilets where directed.
 - 1. Provide toilet tissue, paper towels, and similar disposal materials for each facility. Provide covered waste containers for used materials.
 - 2. Maintain temporary toilets in an antiseptic condition until completion of Work. Clean toilets a minimum of once a week or more often if required. Installation shall be provided in a manner acceptable to Owner, Architect, and governing Board of Health.
- C. Permanent toilet facilities in the existing building shall not be used by construction personnel.
- D. Remove from the premises upon completion of the Work, all temporary facilities which he was responsible to furnish.

3.06 TEMPORARY ENCLOSURES

- A. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior openings.
 - 1. Provide necessary measures to protect temporary and final work, existing building, material and equipment from weather damage. This includes ground water, rainwater, wind, ice, snow and the backing up of sewers and drains.
 - 2. Provide temporary insulated weather tight closures of all openings in exterior walls and roofs.
 - a. Provide this protection. Where existing building is conditioned with heating or cooling, provide insulated temporary enclosures in openings.
 - b. In existing construction, provide temporary enclosures for exterior windows that are to be restored or replaced.
 - 3. Maintain existing roof drains and protect areas of partial demolition until area is enclosed and weather tight.
 - 4. Maintain existing site drainage, exterior catch basins and areaway drains within construction site so water does not pond.
 - 5. Vertical Openings: Close openings of 25 sq. ft. or less with plywood or similar materials.
 - 6. Horizontal Openings: Close openings in floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.

3.07 PROTECTION OF WORK AND PROPERTY

- A. Protect the work and existing or adjacent property against weather, to maintain the work, materials, apparatus and fixtures free from injury or damage in accordance with the General Conditions during the entire construction period. Work likely to be damaged shall be covered or protected at the end of each day's work. Work damaged by failure to provide protection required, shall be removed and replace with new work at the Contractor's expense.
- B. Protect the work in progress in accordance with the provisions of this article and the provisions of individual specification sections.
 - 1. Protect stored and installed material from flowing or standing water.
 - 2. Keep porous and organic materials from coming into prolonged contact with concrete.
 - 3. Do not load or install gypsum board or other porous materials or components, or items with high organic content, into partially enclosed building.
 - 4. Keep interior spaces reasonably clean and protected from water damage.
 - 5. Periodically collect and remove waste containing cellulose or other organic matter.
 - 6. Do not install material that is wet.
 - 7. Discard or replace water-damaged material.

8. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.
- C. Protect the project and existing or adjacent property from damage at all times and shall erect and maintain necessary barriers, furnish and keep lighted necessary danger signals at night, and take precautions to prevent injury or damage to individuals or property.
- D. Utility Protection:
 1. Existing utility lines and structures indicated or known, and utility lines constructed for this Project shall be protected from damage during construction operations by the Contractor.
 2. When utility lines and structures that are to be removed or relocated are encountered within the area of operations, notify the Contractor and affected utility in ample time for the necessary measures to be taken to prevent interruption of the services.
 3. Damage to existing utility lines or structures not indicated or known shall be reported immediately to the General Contractor and the affected utility.

3.08 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise or vibration.
- C. Temporary Erosion and Sedimentation Control: Comply with requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent."
- D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- E. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.
- F. Barricades: Erect and maintain temporary barricades to limit public access to hazardous areas. Whenever safe public access to paved areas such as roads, parking areas or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic, barricades will be required. Securely place barricades clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night.
- G. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire prevention program.
 1. Prohibit smoking in construction areas.
 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.
- H. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- I. Site Enclosure Fence: Prior to commencing earthwork, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.

1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.

3.09 ENVIRONMENTAL CONSIDERATIONS

- A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise or vibration.
1. Asbestos-containing materials (ACM): It is believed that ACM were abated in previous projects that have occurred since 2005.
 2. Lead based paint: Due to the age of construction (prior to 1978), it is assumed that lead based paint is present within the structure. All work procedures impacting or disturbing paint covering any components, surfaces, or structures throughout the structure needs to be performed by all contractors/ workers in accordance with OSHA Standard 29 Code of Federal Regulations (CFR) 1926.62 lead exposure in construction. Each contractor is responsible to ensure that employees are not exposed to lead in excess of the Permissible Exposure Limit (PEL).
 3. Upon encountering any asbestos, lead paint, mold or other pollutant, other than that previously identified, the immediately obtain material sampling tests, and contain and remediate any such pollutant in compliance with applicable Federal, State and Local regulations. Notify the Owner immediately of such instance, deliver a written report to the Owner describing the pollutants and all measures taken to contain, remove and dispose of the pollutants, and obtain clearance sampling tests upon conclusion of all such work showing the site meets acceptable post-remediation standards.
- B. Dust, Fume, and Odor Control: Construction sites inherently product dust- and fume producing environments. Work in occupied facilities poses special challenges with respect to protection of the occupants and maintenance of acceptable indoor air quality. Include general provisions for dust control, maintaining negative air pressure, and separating HVAC systems that are intended to protect occupants from pollutants generated by construction operations

3.10 MOISTURE AND MOLD CONTROL

- A. Constriction Manager's Moisture-Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.
- B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect materials from water damage and keep porous and organic materials from coming into prolonged contact with concrete.
- C. Partially Exposed Construction Phase: After opening and exposure of building interior, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
1. Protect porous materials from water damage.
 2. Protect stored and installed material from flowing or standing water.
 3. Keep porous and organic materials from coming into prolonged contact with concrete.
 4. Remove standing water from decks.
 5. Keep deck openings covered or dammed.
 6. Do not load or install gypsum board or other porous materials or components, or items with high organic content, into partially enclosed building.
 7. Keep interior spaces reasonably clean and protected from water damage.
 8. Periodically collect and remove waste containing cellulose or other organic matter.
 9. Do not install material that is wet.
 10. Discard or replace water-damaged material.
 11. Discard, replace, or clean stored or installed material that begins to grow mold.
 12. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.
- D. Controlled Construction Phase of Construction: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:

1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
2. Use permanent HVAC system to control humidity.
3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.
 - a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective.
 - b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for 48 hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to Architect.
 - c. Remove materials that cannot be completely restored to their manufactured moisture level within 48 hours.

3.11 DEWATERING FACILITIES

- A. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
 1. Extract and dispose of groundwater and rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
 2. Remove snow and ice as required to minimize accumulations.

3.12 ON-SITE STORAGE

- A. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of materials to minimize the opportunity for theft and vandalism.
- B. Provide suitable weathertight storage sheds of sufficient size to hold materials required on the site at one time, for storage of materials which might be damaged by the weather. Storage area on the site will be designated.
- C. Coordinate available space; under no circumstances will any materials be stored outside of the construction limits.

3.13 TEMPORARY FIRE PROTECTION

- A. Take all necessary precautions to guard against and eliminate all possible fire hazards and to prevent damage to any construction work, building materials, equipment, temporary field offices, storage sheds, and all other property, both public and private. The emergency number of the local fire department shall be conspicuously posted in field offices. Take precaution to prevent fire hazards in accordance with all fire protection regulations and codes, including the following:
 1. Prohibit smoking on construction site.
 2. FIRE EXTINGUISHERS: Provide and maintain in working order, at all times during construction, fire extinguishers conveniently located for proper protection. Personnel working on the Project shall be familiarized with the locations and operation of fire extinguishers.
 3. Store combustible materials in containers in fire safe locations.
 4. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways, and other access routes for fighting fires.
 5. In case of fire, notify the fire department immediately. Contractor's workmen shall assist in extinguishing the fire until firefighting personnel arrives.
 6. Perform no welding, flame cutting or other operations involving the use of flame, arcs or sparking devices without adequate protection and shielding. Remove all combustible and flammable materials from the immediate working area. If removal is impossible, protect all flammable or combustible materials. Provide the necessary personnel and firefighting equipment to effectively control any fire resulting from welding, flame cutting or other operations involving the use of flame, arcs or sparking devices.
 7. For all flammable liquids having a flash point of 110 degrees F. or below, use Underwriter's Laboratories' labeled safety cans. Store the bulk supply of all flammable liquid at least 75 feet from the building and yard storage of building materials. Spigots on drums containing flammable liquids are prohibited on the project site. Drums shall be equipped with approved vent pumps.

8. Use only fire resistant tarpaulins.
9. Develop and supervise an overall fire-prevention and first aid fire-protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
10. Provide fire watch for all open flame activities.

3.14 PROTECTION OF THE PUBLIC

- A. All necessary precautions to prevent injury to the public or damage to property of others shall be taken.
- B. When necessary to maintain public use of work areas involving vehicular roadways, etc., protect the public in accordance with the applicable regulations;
- C. When necessary to maintain public use of work areas involving sidewalks, entrances to buildings, lobbies, corridors, aisles, stairways, vehicular roadways, etc., protect the public in accordance with all applicable laws and regulations;
- D. Sidewalks, entrances to buildings, lobbies, corridors, aisles, doors or exits shall be kept clear of obstructions, holes, materials, water intrusion and other conditions to permit safe ingress and egress of the public at all times;
- E. Appropriate warnings, signs and instructional safety signs shall be conspicuously posted where necessary;
- F. Required signs and symbols shall be visible at all times when work is being performed and shall be removed or covered promptly when the hazards no longer exist;

3.15 TEMPORARY CONSTRUCTION BARRIERS

- A. Prior to the start of construction, provide temporary construction fences, barricades, etc. to separate construction activities from the public for safety and liability protection. Location of safety fencing may vary from time to time as construction progress and need dictates. Comply with standards and code requirements for erecting structurally adequate barricades. Provide appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting, including flashing red or amber lights.
- B. Provide and maintain fences, barricades, etc., for adequate protection of persons, street trees, landscaping and adjoining property from damage, harm or exposure due to his work. Remove protective devices when work is complete or when authorized by the Architect.
- C. Provide an 8'-0" minimum high heavily woven chain link construction fence with gates to separate construction staging and storage areas from the public for safety and liability protection. Fencing must be freestanding on standards without any attachment to pavement or paving materials. Sand bags are an acceptable anchorage for this fencing.
 1. Three strands of barbed wire shall be added to the top of fence and angled outward from job site unless special circumstances prevent it, solely at the direction of the Facilities Design and Construction's Project Manager, in consultation with the Director of Projects. Exceptions must be in writing and documented in the project files.
 2. Gates: Provide swing gate assembly for access enclosed storage areas.
 - a. Except during working hours, gates shall be kept locked by the General Contractor at all times.
 - b. One gate shall be double locked with an Owner security padlock and the contractor's padlock in a manner that will allow access by unlocking either padlock. Other prime contractors may install their own padlocks if it is determined that they will require access to the area at time other than regular working hours. The Owner security padlock shall be obtained from, and returned to, the Owner Project Manager.

3.16 ROOFING PROTECTION

- A. Provide protection for roof area(s) that will be affected by the project. Protection shall consist of using ½-inch thick plywood with foam board attached. The composite board shall be laid with the foam towards the roof surface and shall be arranged to protect the roof from falling objects, i.e., hand tools, power hand tools and material. The protective covering shall be secured in a non-destructive fashion (i.e. weighted down) to

avoid dislocation in inclement weather. This protection shall not relieve the Contractor from responsibility to repair any damage to the roof resulting from the work.

- B. At all times that roofing work is in progress, provide such protection measures to assure that the roofing system remains watertight.

3.17 PROTECTION OF INSTALLED CONSTRUCTION

- A. Protect the work and existing or adjacent property against weather and maintain work, materials, apparatus, and fixtures free from injury or damage during the construction period. Cover or protect work at the end of each day's work. Remove work damaged by failure to provide protection and provide new work meeting project requirements at Contractor's expense.
 - 1. Remove snow and ice as required for proper protection and execution of the work and protection and safety of the public.
 - 2. Provide winter weather closures at hoist openings, tops of stairwells, and temporary doors at enclosed openings.
 - 3. Maintain temporary water pumps to keep building basement areas and pits clear of water accumulations at all times.
- B. Refer to "Temporary Construction Barriers" for requirements of tarpaulins.

3.18 DEBRIS REMOVAL

- A. Daily cleanup of the Contractor's debris is mandatory for this project and is to be included in the Contract. Contractor is responsible to properly transport general debris to the dumpster or trash container locations and compaction of debris into said containers in a manner that allows containers to be fully utilized. Materials not removed by the Contractor or improperly stored, will be discarded, as directed by the Architect, at the delinquent Contractor's expense, including replacement of material, if required.
- B. Materials not removed by the Contractor or improperly stored, will be discarded, as directed by the Architect, at the delinquent Contractor's expense, including replacement of material, if required.

3.19 DUMPSTERS

- A. Provide dumpsters as required to service the project. Contractors failing to load dumpsters properly and/or failing to break down cartons, ductwork, etc. will be charged for removal of partially filled dumpsters. Schedule all dumpster deliveries and pickups. The site will allow a construction trailer and dumpster located as directed by the Owner.
- B. Daily cleanup of the Contractor's debris is mandatory for this project and is to be included in the Contract. Contractor is responsible to properly transport general debris to the dumpster or trash container locations and compaction of debris into said containers in a manner that allows containers to be fully utilized. Materials not removed by the Contractor or improperly stored, will be discarded, as directed by the Architect, at the delinquent Contractor's expense, including replacement of material, if required.
- C. Only normal construction debris may be discarded in the dumpsters. Any hazardous materials shall be removed from the project by the Contractor creating or responsible for the debris.
- D. No burning of trash or debris is allowed.

3.20 CONSTRUCTION AIDS

- A. Architect's Access to the Work: Facilitate access to the worksites for the Architect and Owner's representative examination of all portions of the Work while in progress, and during closeout phase of the work. The Architect will communicate the dates of site visits near the completion of the work.
- B. Provide temporary hoists, chutes, scaffold and scaffold towers, swing stages, planking, ladders, and similar items necessary for proper and efficient movement of materials, and operating personnel as required for the performance of the Work by all trades. Such apparatus and equipment shall meet requirements of labor laws, federal safety regulations, and other applicable codes, laws, and regulations of authorities having jurisdiction.

3.21 JOBSITE MAINTENANCE

- A. Comply with all governing traffic control regulations. Clean streets, sidewalks, paved areas, etc., during progress of the work.
- B. Cleaning:
 - 1. Keep the project site free at all times from all waste materials, packaging materials and other rubbish accumulated in connection with the execution of the work by collecting and depositing said materials and rubbish in locations or containers as designated.
 - 2. Clean and remove from own work soiling, staining, mortar, concrete or dirt caused by the execution of the work and make good additional defects resulting there from.
 - 3. At the completion of portions of the Work and the entire completion of Project, remove all tools, equipment, scaffolds, shanties, and surplus materials. Execute all required final cleaning.
- C. Depositing rubbish, scrap materials, debris, etc., in dumpsters (in a specified location). Absolutely no burning of debris or trash will be allowed.

3.22 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Maintain facilities in good operating condition until removal. Materials and facilities that constitute temporary facilities are property of Contractor.
- B. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of Construction Manager's.
 - 2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 01 77 00 – Closeout Procedures.

END OF SECTION

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes the following administrative and procedural requirements: selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.
- B. Related Sections/Documents:
 - 1. Drawings and general provisions of Contract, including General Conditions and Division 01 Specification sections, apply to Work of this section. Such sections include, but are not limited to the following items:
 - a. Section 01 25 00 – Substitution Procedures
 - b. Section 01 33 00 – Submittal Procedures: Requirements for submittals.
 - c. Section 01 77 19 – Closeout Requirements for submitting warranties for contract closeout.

1.02 DEFINITIONS

- A. Definitions in this paragraph are not intended to change the meaning of other terms used in Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," "furnishings," "special construction," and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.
- B. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. "Named Products" are items identified by manufacturer's product name, including make or model number or other designation, shown or listed in the manufacturer's published product literature, which is current as of date of the Contract Documents.
 - 2. "New Products" Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products.
 - 3. "Comparable Product" is a product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in Part 2 "Comparable Products" Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- C. "Basis-of-Design" Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.
 - 1. Evaluation of Comparable Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification. Manufacturer's published attributes and characteristics of basis-of-design product also establish salient characteristics of products for purposes of evaluating comparable products.
- D. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications. Submit a comparable product request, if applicable.

- E. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:
 - 1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
 - 2. Burden of Proof: The burden of proof as to the applicability of the proposed comparable product as well as documentation sufficient for the Architect's review is the responsibility of the Contractor.
 - 3. Data indicating compliance with the requirements specified in Part 2 "Comparable Products" Article.

1.03 ACTION SUBMITTALS

- A. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 01 33 00 – Submittal Procedures.
- B. Substitution: Refer to Section 01 25 00 – Substitution Procedures for definition and limitations on substitutions.
- C. Special Warranty Submittals: Submit special warranties form from manufacturer for Architect's review and approval before procuring product or services.

1.04 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
- B. When specified products are available only from sources that do not or cannot produce a quantity adequate to complete project requirements in a timely manner, consult with the Architect for a determination of the most important product qualities before proceeding. Qualities may include attributes relating to visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources that produce products that possess these qualities, to the fullest extent possible.
- C. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.
 - 1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is not conspicuous.
 - 2. Equipment Nameplates: Provide a permanent nameplate on each item of service- or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:
 - a. Name of product and manufacturer.
 - b. Model and serial number.
 - c. Capacity.
 - d. Speed.
 - e. Ratings.
 - 3. See individual identification Sections in Divisions 21, 22, 23, and 26 for additional equipment identification requirements.

1.05 COORDINATION

- A. Modify or adjust affected work as necessary to integrate work of approved comparable products and approved substitutions.

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, handle and store products according to the manufacturer's recommendations using methods and means that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:

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

C. Packaging:

1. Deliver products to the Project site in their manufacturer's original container, with labels intact and legible.
 - a. Maintain package materials with seals unbroken and labels intact until time of use.
 - b. Promptly remove damaged material and unsuitable items from the project site, and promptly replace with material meeting the specified requirements at no additional cost to the Owner.
2. The Architect may reject as non-complying such materials, equipment, and products that do not bear identification satisfactory to the Architect as to manufacturer, grade, quality, or other pertinent information.

D. Protection:

1. Protect finished surfaces, including but not limited to jambs, soffits or openings used as passageways, through which material and material are transported.
2. Provide protection for finished floor surfaces in traffic areas prior to allowing equipment or materials to be moved over such surfaces.
3. Maintain finished surfaces clean, unmarred and suitably protected until accepted by the Owner.

E. Repairs and Replacements:

1. In the event of damage, promptly make replacements and repairs to the satisfaction of the Owner and at no additional cost to the Owner.
2. Additional time required to secure replacements and to make repairs will not be considered justification for an extension in the Contract Time of Completion.

F. Storage:

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

1.07 PRODUCT WARRANTIES

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

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
 3. Refer to Divisions 02 through 50. Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 01 77 00 – Closeout Procedures.

PART 2 – PRODUCTS

2.01 GENERAL PRODUCT COMPLIANCE

- A. General: The compliance requirements, for individual products as indicated in Contract Documents, are multiple in nature and may include generic, descriptive, proprietary, performance, prescriptive, compliance with standards, compliance with codes, conformance with graphic details and other similar forms and methods of indicating requirements, all of which must be complied with.
1. Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.
 2. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.
 3. Provide products which are free of asbestos and lead.
 4. Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

2.02 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," Architect will make selection.
 5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
 6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
 7. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in Part 2 "Comparable Products" Article to obtain approval for use of an unnamed product.
- B. Product Selection Procedures:
1. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product by the other named manufacturers.
 - a. For approval of products by unnamed manufacturers, comply with requirements in Section 01 25 00 – Substitution Procedures for substitutions for convenience.
 2. Named Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
 3. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.

- a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - b. Nonrestricted List: Where Specifications include a list of names of available products followed by "but are not limited to", provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
 - a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - b. Nonrestricted List: Where Specifications include a list of available manufacturers followed by "but are not limited to", provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
5. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
6. Available Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
7. Available Manufacturers: Where Specifications include a list of manufacturers, provide a product by one of the manufacturers listed, or an unnamed manufacturer, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
8. Product Uniformity: It is the intent of the documents that the completed construction be uniform throughout the Project. For each type of product, the manufacturer and model shall not vary. After a particular product has been identified and approved for an application, that product shall be used for that application across all the subcontracts and other Work-related contracts held by the Contractor. This provision applies equally to accepted substitutions.
9. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
10. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product that complies with other specified requirements.
 - a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that does not include premium items.
 - b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.
 - c. Custom Color or Range: Where Specifications include the phrase "custom color, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from a palette separate from manufacturer's standard and premium items.

2.03 SUBSTITUTE PRODUCTS

- A. Conditions for Consideration: Architect will consider Contractor's request a product substitution per the conditions of "Product Substitutions" article of Section 01 25 00 are satisfied.

2.04 COMPARABLE PRODUCTS

- A. Conditions for Consideration of Comparable Products: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with the following requirements:

1. Evidence that the proposed product does not require revisions to the Contract Documents, which is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 2. Evidence that the proposed product has the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified Product "Standard":
 3. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate the proposed unnamed product.
 4. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 5. Evidence that proposed product provides specified warranty.
 6. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
 7. Samples, if requested.
- B. Architect's Action on Comparable Products Submittal: If necessary, Architect will request additional information or documentation for evaluation, as specified in Section 01 33 00 – Submittal Procedures.
1. Form of Approval of Submittal: As specified in Section 01 33 00 – Submittal Procedures.
 2. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.
- C. Submittal Requirements, Two-Step Process: Approval by the Architect of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install, erect, connect, condition, use, adjust, and clean products in accordance with manufacturer's instructions and in conformity with specified requirements.
1. Verify and coordinate clearances, dimensions and installation of adjoining construction, equipment, piping, ducts, conduits, or other mechanical or electrical items or apparatus.
 2. Prior to fabrication, field measure actual existing conditions to ensure proper fit.
 3. Inspect each item of material or equipment immediately prior to installation. Reject damaged and defective items.
 4. Recheck measurements and dimensions of Work, as an integral step of starting each installation. Whenever stock manufactured products are specified, verify actual space requirements for setting or placing into allotted space. No extra cost will be allowed for adjustment of Work to accommodate particular product.
- B. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
1. Make vertical work plumb and make horizontal work level.
 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
 4. Maintain minimum headroom clearance of 8 feet in spaces without a suspended ceiling.
- C. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- D. Install products at the time and under conditions that will ensure the best possible results in coordination with entire project. Maintain conditions required for product performance until Substantial Completion.
1. Isolate each unit of work from incompatible work as necessary to prevent deterioration.
 2. Coordinate enclosure of work with required inspections and tests to minimize necessity of uncovering work for those purposes.

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- E. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide attachment and connection devices and methods for securing work to withstand stresses, vibration, physical distortion, disfigurement, or racking.
 - 1. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work
 - 2. Mounting Heights: Where not indicated, mount individual units of work at industry recognized standard mounting heights for particular application indicated.
 - a. Refer questionable mounting heights choices to Architect for final decision.
 - b. Elements Identified as Accessible to Handicapped: Comply with applicable codes and regulations.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
 - 4. Secure work true to line and level, and within specified tolerances, or if not specified, industry recognized tolerances. Allow for building movement, including thermal expansion and contraction.
 - 5. Physically separate, provide electrical insulation, or provide protective coatings to prevent galvanic action or corrosion between dissimilar metals.
- I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints. Refer questionable visual-effect choices to Architect for final decision.
- J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.
- K. Clean and perform maintenance on installed Work as frequently as necessary through remainder of construction period. Lubricate operable components to ensure operability without damaging effects.
- L. Adjust operating products and equipment to ensure smooth and unhindered operation.

END OF SECTION

SECTION 01 73 00
EXECUTION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Installation of the Work.
 - 3. Progress cleaning.
 - 4. Starting and adjusting.
 - 5. Protection of installed construction.
 - 6. Correction of the Work.
- B. Related Sections:
 - 1. Drawings and general provisions of Contract, including General Conditions and Division 01 Specification sections, apply to Work of this section. Such sections include, but are not limited to the following items:
 - a. Section 01 31 00 – Project Coordination for procedures for coordinating field engineering with other construction activities.
 - b. Section 01 73 29 – Cutting and Patching for procedural requirements for cutting and patching necessary for the installation or performance of other components of the Work.
 - c. Section 02 41 19 – Selective Demolition for demolition and removal of selected portions of the building.

1.02 ACTION SUBMITTALS

- A. Provide the following in conformance with Section 01 30 00 – Submittal Procedures.
- B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

1.03 QUALITY ASSURANCE

- A. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - 4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.
- C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 - 1. Description of the Work.
 - 2. List of detrimental conditions, including substrates.
 - 3. List of unacceptable installation tolerances.
 - 4. Recommended corrections.
- D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.02 PREPARATION

- A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 01 31 00 – Project Coordination.

3.03 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Protect concrete floor which is to have an exposed finish, or is to have a polished concrete finish from staining and other damage until substantial completion. Cutting of pipe and similar operations that may stain flooring shall not be done at locations scheduled to have a resilient sheet flooring or carpeting as the finished floor covering.
- D. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

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- E. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- F. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- G. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- H. Templates: Obtain and distribute to the party's involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- I. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
 - 1. Allow for building movement, including thermal expansion and contraction.
 - 2. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- J. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- K. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.04 LIMIT EXPOSURE

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

3.05 CUTTING AND PATCHING

- A. Refer to Section 01 73 29 – Cutting and Patching.

3.06 PROHIBITED MATERIALS AND METHODS

- A. The following items are expressly prohibited:
- B. Core Drilling: Not permitted unless approved by Structural Engineer.
- C. Attachment Related Items:
 - 1. Ballistic Fasteners: Ballistic fasteners are defined as anchors which are driven into place by any device which produces an impact force by use of a powder charge, compressed air, gas or any other propellant. Ballistic fasteners prohibited for the following conditions:
 - a. Attachment of structural members.
 - b. Where public may be endangered by misuse.
 - 2. Suspension systems which are not independently supported:
 - a. Ceiling grid systems shall not be supported from ductwork, electrical conduit, heating or plumbing lines, and vice versa.
 - b. Each utility system and the ceiling grid system shall be a separate installation and each shall be independently supported from the building structure.
 - c. Where interference occurs, provide trapeze type hangers or other suitable supports for each system.
 - d. Locate hangers and supports where they will not interfere with access to mixing boxes, fire dampers, valves, and other appurtenances requiring servicing.
 - e. See OVERHEAD ATTACHMENTS above.

3. Plug anchorage by use of wood, lead, or plastic.
4. Perforated steel strap iron for pipe or other support or anchorage.
5. Penetration of cellular (electrical) deck by fasteners or welding except as required for installation of deck system and associated electrical work.

D. Methods Related Items:

1. The penetration of floors and of walls by pipes, ducts, or other penetrations unless openings are appropriately fire stopped by fire doors, or fire dampers, and voids around pipes, ducts, conduits, etc. are sealed with fireproof materials.
2. The use of ink marking pens on surfaces of any kind of materials receiving paint or other finish in exposed location.
3. Use of jack hammers or other similar equipment which can cause structure-borne vibration detrimental to the use of the existing facilities, (i.e.: surgical functions).

3.07 PROGRESS CLEANING

- A. Clean and protect construction in progress and adjoining materials in place during handling and installation. Apply protective covering where required to assure protection from damage or deterioration until Individual Substantial Completion dates.
- B. During the progress of the work, remove all waste materials and rubbish and deposit such waste in the project dumpster. Perform daily broom cleaning in the area of the Contractor's work. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period.
 1. Keep the premises free at all times from all waste materials, packaging materials and other rubbish accumulated in connection with the execution of work by collecting and depositing said materials and rubbish in locations or containers as designated by the Contractor.
 2. Clean and remove from own work soiling, staining, mortar, concrete or dirt caused by the execution of work and make good additional defects resulting therefrom.
 3. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - a. Remove liquid spills promptly.
 - b. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
 4. Absolutely no burning of debris or trash will be allowed.
 5. At the completion of portions of the Work and the entire completion of work, remove all tools, equipment, scaffolds, shanties, and surplus materials. Execute all required final cleaning.
- C. General: Clean Project work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
 3. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.
 4. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
 - a. Use containers intended for holding waste materials of type to be stored.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

- G. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- H. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- I. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.08 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Section 01 45 00 – Quality Requirements.

3.09 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.
- C. Comply with manufacturer's written instructions for temperature and relative humidity.

3.10 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Section 01 73 29 – Cutting and Patching.
 - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION

SECTION 01 73 29 CUTTING AND PATCHING

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes requirements and limitations for cutting and patching of the Work.
- B. Related Sections:
 - 1. Drawings and general provisions of the Contract, including General Conditions and Division 01 specification sections, apply to work of this section.
 - 2. Section 01 33 00 – Submittal Procedures.
 - 3. Divisions 03 through 50 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1.02 DEFINITIONS

- A. "Cutting and patching" includes cutting into existing construction to provide for the installation or performance of other work and subsequent fitting and patching required to restore surfaces to their original condition.
 - 1. "Cutting and patching" is performed for coordination of the Work, to uncover work for access or inspection, to obtain samples for testing, to permit alterations to be performed or for other similar purposes.
 - a. Cutting and patching performed during the manufacture of products, or during the initial fabrication, erection or installation processes is not considered to be "cutting and patching" under this definition. Drilling of holes to install fasteners and similar operations are also not considered to be "cutting and patching."
 - 2. "Tooththing in" – is the process of removing masonry at a specific location in the existing wall for the purpose of creating an opening in the existing wall, or to fill an existing opening by removing half-blocks such that other full stretcher units can be installed to fill the opening in a toothed pattern. Follow procedures described herein.
 - 3. "Channeling" is a cutting and patching process to remove the minimum amount of finish and substrate materials necessary to "Channel" a path on the face of a surface to permit the installation of new electrical service in the work.
- B. "Selective Demolition" is a related but separate category of work which may or may not require cutting and patching required in this section.

1.03 DESCRIPTION

- A. Drawings generally indicate the extent of demolition, removals, relocations and cutting. The drawings shall not be construed as indicating all required work, nor indicating all conditions or details which might be encountered to accomplish the work of this Contract.
 - 1. The Contractor and subcontractors must examine the existing conditions themselves to determine the actual requirements. All removals, demolition, cutting, restoration, new installations and other work shall be accomplished to transform the existing conditions to the new conditions required under the Contract, as well as to accomplish all tie-in work of new to existing.

1.04 ACTION SUBMITTALS

- A. Procedural Proposal for Cutting and Patching: Prior approval of cutting and patching is required for work which is not identified or inferred from the Contract Documents; therefore, submit proposed procedures for this work well in advance of the time work will be performed and request approval to proceed. Include the following information, as applicable, in the submittal.

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1. Describe nature of the work and how it is to be performed, indicating why cutting and patching cannot be avoided. Describe anticipated results of the work in terms of changes to existing work, including structural, operational and visual changes as well as other significant elements.
2. List products, equipment, and techniques to be used and firms that will perform work.
3. Give a schedule of dates when work is expected to be performed.
4. List products, equipment, and techniques to be used and firms that will perform work.
5. Where cutting and patching of structural work involves the addition of reinforcement it shall be integrated with original structure to satisfy requirements.
6. Approval by the Architect to proceed with cutting and patching work does not waive the Architect's right to later require complete removal and replacement of work found to be cut and patched in an unsatisfactory manner.
7. Furnish protection from dust and noise to occupied areas.
8. Furnish adequate collection and removal of water for concrete cutting and coring.

1.05 QUALITY ASSURANCE

- A. Skilled Mechanics: Accomplish all work of cutting, removal, demolition, relocation, patching and other restoration by using only mechanics skilled in the trade. If required, sublet the work to skilled contractors or subcontractors.
- B. Before cutting and patching decorative finish material to remain in the work, obtain the Architect's approval to proceed. Review cut and patch procedures involved in the work with the Architect prior to start of such work.
- C. Do not cut and patch operational elements or safety related components in a manner that would result in a reduction of their capacity to perform in the manner intended, included energy performance, or that would result in increased maintenance, or decreased operational life or decreased safety.
- D. Cut and patch in a manner that is compatible with the building's aesthetic qualities. Do not cut and patch work in a manner that would result in substantial visual evidence of cut and patch work. Review cut and patch procedures involved in the work with the Architect prior to start of such work. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- E. Structural Elements: Where the work of removals, demolition, cutting and similar work involves structural consideration, extreme care shall be exercised to avoid damage and preserve the safety of the structure and all personnel. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
- F. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or which results in increased maintenance or decreased operational life or safety.
- G. Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
 1. Water, moisture, or vapor barriers.
 2. Membranes and flashings.
 3. Equipment supports.
 4. Piping, ductwork, vessels, and equipment.
 5. Noise- and vibration-control elements and systems.

1.06 COORDINATION

- A. Contractor is responsible for the coordination of the cutting and patching required for installation of the work of all trades, except as otherwise shown on the drawings.
- B. Provide cutting of construction for the installation of work, to uncover work for access or inspection, for coordination with other work, or for similar purposes, and provide for patching required to restore surfaces to original or modified condition.
- C. Determine the location and size of opening required for the installation of the work. Cost of cutting and patching shall be borne by the Contractor requiring the opening or access.
- D. Coordinate the location and size of openings required for the work of all trades.

- E. Coordinate the locations and installation of sleeves and supporting devices to be installed in the construction for the installation of the work of all trades.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Provide same products or types of construction as that in existing structure, as needed to patch, extend, or match existing work. Generally, Contract Documents do not define product or standards of installation present in existing construction; Contractor shall determine products by inspection and necessary testing and installation by use of the existing as a sample for comparison.
- B. Materials for patching shall match existing adjacent surfaces to the fullest extent possible with regard to visual effect and installed performance characteristics.
- C. Presence of a product, finish, or type of construction, required that patching extending, or matching shall be performed as necessary to make work complete and result in equal or better standards of quality.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Before cutting existing surfaces, examine the surfaces to be cut and patched and the conditions under which the work is to be performed. If unsafe or otherwise unsatisfactory conditions are encountered, take corrective action before proceeding with the work.
- B. Before the start of cutting work, coordinate layout of the work and resolve potential conflicts before proceeding.
 - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Temporary Support: Provide temporary support to ensure structural integrity of affected portions of Work.
 - 1. Provide devices and methods to protect other portions of Project from damage.
 - 2. Provide materials and control operations to prevent spread of dust in surrounding area. Provide drop cloths or other suitable barriers.
- B. Protect in place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for that part of the project that may be exposed during cutting and patching operations.
- C. Take precautions not to cut existing pipe scheduled to be removed or relocated until provisions have been made to bypass them.

3.03 PERFORMANCE

- A. Perform cutting and removal of existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.
- B. Employ skilled workmen capable of matching existing quality of existing construction to perform cutting and patching work. Proceed with cutting and patching at the earliest feasible time and complete work without delay.
- C. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize or preferably to prevent interruption to occupied areas.
- D. Cut, fit and patch, including excavation and backfill, to complete Work and to:
 - 1. Fit several parts together, to integrate with other work.

2. Uncover portions of work to provide for installation of ill-timed work.
3. Remove and replace defective work.
4. Remove and replace work not conforming to requirements of Contract Documents.
5. Remove samples of installed work as necessary for testing.
6. Provide openings in elements of work for penetrations of plumbing, mechanical, and electrical work.
7. Uncover work to allow for Architect's observation of covered work which has been covered up prior to required observation by Architect.

3.04 CUTTING AND REMOVAL REQUIREMENTS

- A. Cut and remove existing construction as required, to accomplish the Work. Where new Work is to be installed in or adjacent to existing construction or existing work is to be replaced, remove or cut the existing construction as necessary to complete the Work of the Project.
- B. Execute work with care. Existing construction that is to remain which is loosened, cracked, or otherwise damaged or defaced as a result of the cutting and is unsuitable for use intended shall be removed and replaced at no additional cost to the Owner.
- C. Perform cutting and removal work to remove minimum materials and surfaces necessary using methods that are least likely to damage elements to be retained. Protect adjoining finishes to remain from damage.
 1. In general, where cutting is required, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut through masonry using a cutting machine such as a carborundum saw or diamond core drill to ensure a neat hole. Cut finish surfaces such as masonry, clay tiles or metals using methods to terminate surfaces in a straight line at a natural point of division. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces. Temporarily cover openings when not in use.
 2. By-pass utility services such as pipe, before cutting, where such utility services are shown or required to be removed, relocated or abandoned. Cut off pipe in walls or partitions to be removed. After by-pass and cutting; cap, valve or plug and seal tight remaining portion of pipe and conduit to prevent entrance of moisture or other foreign matter.
 3. Remove existing construction as noted or required to be removed in order to accommodate new work.

3.05 PATCHING REQUIREMENTS

- A. Patch or otherwise restore disturbed existing construction as indicated on the drawings and schedules, or as otherwise required to restore the work and surfaces. Patching or restoration shall be carried to natural breaks (i.e., corners) wherever possible. Where existing construction is removed, cut or otherwise disturbed by Work of the Project, patch defective and incomplete surfaces. Repair any damage to existing construction which is to remain.
- B. Patching work shall be done by skilled mechanics experienced in the particular type of work involved and shall conform to the standards of the Specifications.
- C. Patch existing construction to match existing work (unless otherwise called for) except provide new materials and accomplish as for new work. Examine existing surfaces to be patched before proceeding with the work. Report all conditions where existing materials, colors and finishes cannot be matched to the Architect, and do not proceed until instructions have been given.
- D. Existing construction that has been damaged as a result of the Work shall be repaired to an extent and as required to match adjacent existing undamaged construction.
- E. Patch with durable seams that are as invisible as possible. Comply with specified tolerances for the work.
 1. Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work.
 2. Fit work tight to new sleeves, pipes, ducts, conduits and other penetrations through the wall surface.
 3. At penetrations of fire rated wall and ceiling or floor construction, completely seal voids with fire-resistant sealant materials in accordance with Section 07 84 00 – Firestopping, to full thickness of the penetrated element.
 4. Inspect and test patched areas to verify integrity of the installation.

5. Restore surfaces and conditions exposed by removal of existing equipment, features and items, i.e., holes, recesses, interruption of continuity of finishes, etc.
 6. Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 7. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 8. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- F. Restoration: Except where indicated otherwise, restore exposed finishes of patched areas to match adjacent surfaces and where necessary extend finish restoration into retained adjoining surfaces in manner which will eliminate evidence of patching and refinishing. Thoroughly clean surfaces prior to application of paint and other finishes.
1. Where patching occurs in previously painted surface, provide appropriate prime coat followed by first finish coat of paint. Provide final finish coat over entire area containing patch; for continuous surface extend to nearest vertical break or intersection, for an assembly refinish entire unit. Except where indicated otherwise, finish in sheen and color to match adjacent surfaces.

3.06 CLEANING

- A. Thoroughly clean areas and spaces where cutting and patching work is performed or used as access to work.
- B. Perform periodic and final cleaning as specified in Section 01 77 19 — Closeout Requirements.
 1. Clean Owner-occupied areas daily.
 2. Clean spillage, overspray, and heavy collection of dust in Owner- occupied areas immediately.
- C. At completion of work of each trade, clean area and make surfaces ready for work of successive trades.
- D. At completion of alterations work in each area, provide final cleaning and return space to a condition suitable for use by Owner.

END OF SECTION

SECTION 01 77 19
CLOSEOUT REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Project Record Documents.
 - 3. Warranties.
 - 4. Instruction of Owner's personnel.
 - 5. Startup and Commissioning
 - 6. Final cleaning.
- B. Related Sections/Documents:
 - 1. Drawings and general provisions of Contract, including General Conditions and Division 1 Specification sections, apply to Work of this section.

1.02 DESCRIPTION OF REQUIREMENTS

- A. Definitions: Closeout is hereby defined to include general requirements near end of Contract Time, in preparation for final acceptance, final payment, normal termination of contract, occupancy by Owner and similar actions evidencing completion of the Work.
 - 1. Specified requirements for individual units of Work are specified in sections of Divisions 01 through 49.
 - 2. Time of closeout is directly related to "Substantial Completion," and therefore may be either a single time period for entire Work or a series of time periods for individual parts of the Work which have been certified as substantially complete at different dates. That time variation (if any) shall be applicable to other provisions of this section.
 - 3. All items listed on the Certificate of Substantial Completion must be completed and all closeout requirements submitted to the Architect within sixty (60) days of the date of the Certificate of Substantial Completion. Failure to do so will result in issuance of a 72-hour notice to surety of record.

1.03 ACTION SUBMITTALS

- A. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- B. Certified List of Incomplete Items: Final submittal at Final Completion.

1.04 CLOSEOUT SUBMITTALS

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

1.05 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
 - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 - 2. Advise Owner of pending insurance changeover requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

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5. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs, damage or settlement surveys, property surveys, and similar final record information.
 6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
 7. Complete startup testing of systems.
 8. Submit test/adjust/balance records.
 9. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 10. Advise Owner of changeover in heat and other utilities.
 11. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
 12. Complete final cleaning requirements, including touchup painting.
 13. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect and Owner's Representative will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 2. Results of completed inspection will form initial "punch-list" for final acceptance.

1.06 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
1. Submit final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 2. Submit updated final statement, accounting for additional (final) changes to Contract Sum.
 3. Submit copy of final punch-list of itemized Work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed and dated by the Architect.
 4. Revise and submit evidence of final, continuing insurance coverage complying with insurance requirements.
 5. Submit specific warranties, workmanship/maintenance bonds, maintenance agreements, final certifications and similar documents.
 6. Obtain and submit releases enabling Owner's full and unrestricted use of Work and access to services and utilities, including (where required) occupancy permits, operating certificates, and similar releases.
 7. Make final change-over of locks and transmit keys to Owner, and advise Owner's personnel of change-over in security provisions.
 8. Submit record drawings, maintenance manuals, and similar final record information.
 9. Complete start-up testing of systems, and instruction of the Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities and services from the project site, along with construction tools, facilities and similar items.
 10. Complete final cleaning up requirements.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect and Owner's Representative will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.07 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Preparation: Submit three copies of list for each phase. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
1. Organize list of spaces in sequential order proceeding from lowest floor to highest floor.
 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
 3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Page number.
- B. Re-inspection procedure: Upon receipt of Contractor's notice that the Work has been completed, including punch-list items resulting from earlier inspections, and excepting incomplete items delayed because of acceptable circumstances, Architect will re-inspect the Work. Upon completion of re-inspection, Architect will either prepare certificate of final acceptance or advise Contractor of Work not completed or obligations not fulfilled as required for final acceptance. If necessary, procedure will be repeated.

1.08 AS-BUILT DOCUMENT SUBMITTALS

- A. Maintain at the site one set of documents marked as "As-built Documents;" maintain in up-to-date and correct condition; do not permanently conceal any Work until required information has been recorded.
- B. As-Built Drawings: Maintain a clean undamaged set of blue or blackline white-prints of Contract drawings and shop drawings. Mark set to show actual installation where the installation varies substantially from the work as originally shown. Mark the drawing that is most capable of showing conditions fully and accurately. Where shop drawings are used, record a cross-reference at the corresponding location on the Contract drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
1. Mark as-built sets with a red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work.
 2. Mark new information that is important to the Owner but was not shown on Contract drawings or shop drawings.
 3. Note related change-order numbers where applicable.
 4. Organize as-built drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.
- C. Electronic Submittals, Drawings: Provide one CD of electronic AutoCad/Revit files as follows:
1. Initial Submittal: Submit one set(s) of corrected As-built CAD Drawings in electronic AutoCAD .dwg format and one set(s) of marked up As-built prints. The following file formats will not be accepted: (.tif, .jpg, .jpeg, .pdf). Architect will initial and date each As-built CAD drawing and mark whether general scope of changes, additional information recorded, and quality of drafting are acceptable. Architect will return As-built Drawings and prints for organizing into sets, printing, binding, and final submittal.
 2. Final Submittal: Submit one set(s) of As-built CAD Drawings, one set of marked-up As-built prints, and three copies printed form Record CAD drawings. Print each drawing, whether or not changes and additional information were recorded.
- D. As-built Specifications: Maintain one copy of the Project Manual, including addenda. Include with the Project Manual one copy of other written construction documents, such as change orders and modifications issued in printed form during construction.
1. Mark these documents to show significant variations in actual work performed in comparison with information submitted. Include variations in products delivered to the site and from the manufacturer's installation instructions and recommendation.
 2. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation.
 3. Note related as-built drawing information and product data.

4. Upon completion of Work, submit as-built specifications to the Architect for the Owner's records.
- E. As-built Product Data: Maintain one copy of each project data submittal. Note related Change Orders and markup of as-built drawings and specifications.
 1. Mark these documents to show significant variations in actual work performed in comparison with information submitted. Include variations in products delivered to the site and from the manufacturer's installation instructions and recommendations.
 2. Give particular attention to concealed products and portions of the work that cannot otherwise be readily discerned later by direct observation.
 3. Upon completion of markup, submit complete set of as-built product data to the Architect for the Owner's records.
- F. Miscellaneous As-built Submittals: Refer to other specification sections for requirements of miscellaneous record keeping and submittals in connection with actual performance of the work. Immediately prior to the date or dates of final completion, complete miscellaneous records and place in good order. Identify miscellaneous records properly and bind or file, ready for continued use and reference. Submit to the Architect for the Owner's records.

1.09 OPERATION AND MAINTENANCE MANUALS

- A. Assemble a complete set of operation and maintenance data indicating the operation and maintenance of each system, subsystem, and piece of equipment not part of a system and submit as one package before making application for final payment. Include operation and maintenance data required in individual Specification Sections and as follows:
 1. General:
 - a. In order to communicate to all necessary Owner personnel the starting date of the one year correction period, include a copy of the executed Certificate(s) of Substantial Completion.
 - b. Documentation of manufacturer's initial startup.
 - c. Record copy of test results, affidavits, certificates, approvals, and inspections required by the Contract Documents.
 - d. Owner equipment forms for each applicable piece of equipment.
 2. Operation Data:
 - a. Emergency instructions and procedures.
 - b. System, subsystem, and equipment descriptions, including operating standards.
 - c. Performance and design criteria if Contractor is delegated design responsibility.
 - d. Operating procedures, including startup, shutdown, seasonal, and weekend operations.
 - e. Description of controls and sequence of operations.
 - f. Wiring, control and piping diagrams.
 3. Operating Procedures: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Instructions on stopping.
 - f. Normal shutdown instructions.
 - g. Seasonal and weekend operating instructions.
 - h. Required sequences for electric or electronic systems.
 - i. Special operating instructions and procedures.
 4. Maintenance Data:
 - a. Manufacturer's information, including list of spare parts and local service organization.
 - b. Name, address, and telephone number of Installer or supplier.
 - c. Maintenance procedures.
 - d. Preventative maintenance inspections, testing, service, lubrication, maintenance instructions and schedules.
 - e. Maintenance record forms.
 - f. Sources of spare parts and maintenance materials.
 - g. Copies of maintenance service agreements.

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- A. Refer to individual sections of Divisions 02 through 49 for the determination of units of Work which are required to be specifically or individually warranted, and for the specific requirements and terms of those warranties (or guarantees).
- B. Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

- C. Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.
- D. Reinstatement of Warranty: When work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- E. Replacement Cost: Upon determination that Work covered by the warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirement of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.
- F. Owner's Recourse: Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.
 - 1. The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
- G. When the Contract documents require a special warranty, or similar commitment on the Work or part of the Work, the Owner reserves the right to refuse to accept the Work, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.
- H. Submit written warranties to the Architect prior to the date for Final Completion. If the Architect's certificate of Final completion designates a commencement date for warranties other than the date of Final completion for the Work, or a designated portion of the work, submit written warranties upon request of the Architect.
- I. When the Contract documents require the Contractor, or the Contractor and a subcontractor, supplier or manufacturer to execute a special warranty, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner, through the Architect, for approval prior to final execution. Refer to Divisions 02 through 50 sections for specific content requirements and particular requirements for submitting special warranties.
- J. At Final Completion compile 2 copies of each required warranty properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual. When warranted construction requires operation and maintenance manuals provide additional copies of each required warranty, as necessary, for inclusion in each manual.
 - 1. Bind warranties in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
 - 4. Scan warranties and assemble complete warranty submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide table of contents at beginning of document.
 - 5. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 – EXECUTION

3.01 STARTUP & COMMISSIONING

- A. This article includes procedures for start-up and commissioning of Plumbing equipment and systems, Fire Protection equipment and system, HVAC equipment and systems, and Electric equipment and systems, under the supervision of the Architect.
- B. Each Subcontractor shall be fully responsible to manage and complete the Commissioning Process. Each Subcontractor shall designate an individual that will be responsible for overseeing the entire process and will be present at each activity to direct the process. A plan and schedule shall be submitted by the Subcontractor that will include a list of activities and milestone dates. This will fit into the master construction schedule.
- C. Each Subcontractor will provide documentation, testing, and will otherwise demonstrate that equipment and systems perform and operate as specified. Required documentation and testing are generally indicated throughout the contract documents.
- D. In general, for each discipline, commissioning will consist of:
 - 1. Shop Drawing Submittals: Each Subcontractor will submit shop drawings for all equipment and materials to be used, as specified, and as required by the Shop Drawing Submittal Log.
 - 2. Testing and Inspections: Each Subcontractor will arrange for and schedule testing and inspections, as required by the corresponding Authority Having Jurisdiction (AHJ). Subcontractors will advise the Contractor in advance of all scheduled inspections. Subcontractors will maintain documentation of all scheduled inspections for incorporation into the as-built documents.
 - 3. Each Subcontractor will perform testing of materials and assembled systems as specified. Representatives of the Owner, and Architect, in part or in whole, will witness all specified testing.
 - 4. The Owner, and Architect will regularly inspect and evaluate installed work. Directives for corrective action will be issued in writing. Each Subcontractor will correct deficiencies as required, and will return the written directive, indicating that the corrective work has been completed.
 - 5. Performance Testing for Equipment and Systems: Each Subcontractor will demonstrate that individual pieces of equipment perform as specified. Performance testing for equipment will be as specified, and as indicated herein. Performance testing will be performed in the presence of the Owner, and Architect.
 - 6. Balancing of Systems: Each Subcontractor will balance dynamic systems as specified and indicated herein.
 - 7. Demonstration of Sequences of Operation: Each Subcontractor will demonstrate that equipment and systems operate in the sequences specified. The demonstration of sequences of operation will be conducted in the presence of the Owner, and Architect.
 - 8. Instruction of the Owner: Each Subcontractor will instruct the Owner in the operation and maintenance of each piece of system and associated equipment. Instruction will be comprehensive and will adhere to the outline syllabus contained herein. Each Subcontractor must video tape each training session and provide video tapes from equipment vendors that give clear instruction on the operation and maintenance of their equipment.
 - 9. As-built Documentation: Each Subcontractor will maintain and compile as-built documents as specified and indicated herein.

3.02 DEMONSTRATION AND TRAINING

- A. Instruction: Instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
 - 1. Provide instructors experienced in operation and maintenance procedures.
 - 2. Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at the start of each season.
 - 3. Schedule training with Owner through Owner's Representative with at least seven days' advance notice.
 - 4. Coordinate instructors, including providing notification of dates, times, length of instruction, and course content.
 - 5. Provide DVD of Training Video. Video of on-site training is permitted.

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- B. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections. For each training module, develop a learning objective and teaching outline. Include instruction for the following:
1. System design and operational philosophy.
 2. Review of documentation.
 3. Operations.
 4. Adjustments.
 5. Troubleshooting.
 6. Maintenance.
 7. Repair.

3.03 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
1. The entire project area shall be cleaned immediately prior to final inspection.
 2. When punch list work generates dust and debris, an additional cleaning will be needed prior to occupancy.
- B. Provide final cleaning of the Work when indicated, employing experienced workers or a professional cleaning company for final cleaning. Clean each surface or unit of work to the condition expected from a commercial building cleaning and maintenance program. Comply with manufacturer's specific instructions for cleaning operations for materials installed and specified herein.
1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of the Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, tunnels, pipe spaces, crawl spaces, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
 - j. Vacuum clean and mop resilient flooring surfaces.
 - k. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - l. Remove labels that are not permanent.
 - 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
 - m. Touch up and otherwise repair and restore marred, exposed finishes and surfaces.
 - n. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - o. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - p. Replace parts subject to unusual operating conditions.
 - q. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

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- r. Clean interior of cabinets and casework, converters, unit heaters, radiation, electric panels, and similar items.
- s. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
- t. Clean ducts, blowers, and coils if units were operated without filters during construction.
- u. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
- v. Leave Project clean and ready for occupancy.

END OF SECTION

SECTION 02 41 19
SELECTIVE DEMOLITION

PART 1 – GENERAL

1.01 SUMMARY

- A. This section includes the following:
 - 1. Demolition and removal of selected portions of building or structure.
 - 2. Salvage of existing items to be reused or recycled.
 - 3. Removal and disposal of all debris.
- B. Related Sections:
 - 1. Section 01 35 91 – Special Procedures For Historic Treatment

1.02 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished materials become Contractor's property; remove from Project site.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
 - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.03 ACTION SUBMITTALS

- A. Prepare submittals in accordance with the provisions of Section 01 33 00 – Submittal Procedures.
- B. Prepare and submit for approval, drawings of the portions of existing building where openings will be cut in existing construction, showing size and location of openings to be made in existing construction.
- C. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of selective demolition.

1.04 PRE-SELECTIVE DEMOLITION MEETING

- A. Conduct conference at Project site.
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 - 5. Review areas where existing construction is to remain and requires protection.

1.05 QUALITY ASSURANCE

- A. Applicable federal law and local codes shall apply to work under this section including, but not limited to, the following:
 - 1. National Fire Protection Association
 - 2. National Electric Code
- B. Do not use jack hammers or other heavy duty impacting type tools for demolition work without permission of the Architect.
- C. Verify that utility supply lines have been shut off before removal.
- D. Provide fire extinguishers on site of multi-use type during demolition work.

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- E. Comply with applicable safety codes for demolition work.

1.06 REGULATORY REQUIREMENTS

- A. Conform to the applicable requirements of the Ohio Building Code, Ohio EPA regulations, for demolition of structures, safety of adjacent structures, dust control, and disposal procedures.
- B. Obtain necessary permits from authorities having jurisdiction.
- C. Notify affected utility companies before starting work and comply with their requirements.
- D. Conform to applicable regulatory procedures when discovering hazardous or contaminated materials.
- E. Do not close or obstruct egress width to exits. Maintain protected egress and access at all times.

1.07 PROJECT CONDITIONS

- A. Carefully inspect the construction work area and items designated to be removed or preserved. Refer questions to the Architect before proceeding with the work.
- B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- C. Refer to the Drawings for extent of selective demolition and removal work. Examine all adjoining work which may affect in any way selective demolition work.
- D. Provide for and coordinate temporary utility services to existing building as indicated on the drawings or specified.

1.08 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Section 01 77 19 – Closeout Requirements.
- B. Accurately record actual locations of capped utilities, subsurface obstructions, and utility lines, on project record documents.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. Perform 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.

3.02 PROTECTION REQUIREMENTS

- A. Selective Demolition Protection Procedures:
 - 1. Provide protective measures required by this specification in excess of those requirements for temporary protection specified under Section 01 50 00 – Temporary Facilities and Controls.
 - 2. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of structure or element to be demolished, and adjacent facilities or work to remain. Ensure safe passage around areas of demolition. Prevent injury to adjacent facilities. Erect temporary covered passageways as required by authorities having jurisdiction.

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3. Protect from damage existing finish work that is to remain in place and becomes exposed during demolition operations.
 4. Remove temporary protections required by this section at completion of selective demolition work.
- B. Protect, support and maintain all conduits, drains, sewers, pipes, and wires to remain and which are subject to damage by construction activities.
1. Notify Architect if wires, conduits, pipes or other utilities serving building functions will be affected by demolition or remodeling before commencing such operations.
 2. Disconnect and cap pipes and utilities as required and as necessary for demolition and alteration work.
 3. Identify and indicate capping locations on Project Record Documents.
- C. Provide protection for existing building surfaces and building components such that there is no possibility of damage to same, from demolition operations caused by impact, nicking, scratching, staining, or spillage of materials.
- D. The protection system selected shall not be anchored to existing building finish surfaces or building components.
- E. Protect items to be reused and relocated in construction. Refer to drawing notes.
- F. Protection of Existing Surfaces:
1. Provide at minimum, protection levels specified in Section 01 50 00 – Temporary Facilities and Controls.
 2. When removing portions of walls, partitions, or other vertical construction, or portions of vertical construction which is not to be totally demolished, provide floor covering protection on both sides of construction being demolished a distance of at least 4 feet or to the adjacent wall, whichever is the lesser distance.

3.03 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. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Construction Manager and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
 2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
 3. Protect existing site improvements, appurtenances, and landscaping to remain.
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
 5. Existing Facilities: Comply with specification requirements for using and protecting elevators, stairs, walkways, loading docks, building entries, and other building facilities during selective demolition operations.
 6. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 01 50 00 – Temporary Facilities and Controls.
- C. Temporary Enclosures: Provide temporary enclosures for protection of existing building and construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

- D. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of selective demolition.
 - 2. Remove temporary barricades and protections where hazards no longer exist.

3.04 SELECTIVE DEMOLITION, GENERAL

- A. Work on Historic Sites: Selective Demolition activities shall proceed so as to maintain, where indicated and where otherwise possible, the original fabric of the building. Where possible, decorative painted plaster and decorative plaster work which is located above drop ceilings shall be retained.
- B. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 - 2. 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. Do not use power driven impact tools. Temporarily cover openings to remain.
 - 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
 - a. 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. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 - 7. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 - 8. Dispose of demolished items and materials promptly.
- C. Remove all hangers, supports, miscellaneous framing and similar items used to support work to be demolished and removed.
- D. Removed and Salvaged Items: Comply with the following:
 - 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 authorized storage area.
 - 4. Protect items from damage during transport and storage.
 - 5. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
 - 6. Pack or crate items after cleaning and repairing. Identify contents of containers.
 - 7. Protect items from damage during transport and storage.
- E. Removed and Reinstalled Items:
 - 1. Prepare for reuse, clean, repair, refurbish, refinish or modify as indicated elsewhere in the Contract Documents.
 - 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.

- F. 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, or in locations indicated, after selective demolition operations are complete.

3.05 PATCHING AND REPAIRS

- A. Promptly repair damage to adjacent construction caused by selective demolition operations.
- B. Patching: Comply with Section 01 73 00 - Cutting and Patching.

3.06 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Refer to Section 01 73 29 – Cutting and Patching for additional direction.
- B. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 3/4 inch (19 mm) at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.
- C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- D. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
- E. Roofing: Remove no more existing roofing than can be covered in one day by new roofing and so that building interior remains watertight and weathertight.

3.07 DISPOSITION OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them.
 - 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. As work progresses, remove from site and legally dispose of all materials, products and debris removed during demolition work and not scheduled to be either salvaged or re-used.
- B. Clean interior and exterior areas used for removal routes of debris.
- C. Remove temporary work related to selective demolition operations upon completion of the work.

3.08 CLEANUP AND REPAIR

- A. General: Upon completion of demolition work, remove tools, equipment, and demolished materials from site.
 - 1. Repair demolition performed in excess of that required. Return elements of construction and surfaces to remain to condition existing prior to start operations. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.
- B. Upon completion of work, leave premises clean, neat and orderly and acceptable to the Architect.

END OF SECTION

SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes cast-in-place concrete, including reinforcement, concrete materials, mixture design, placement procedures, and finishes for the following:
 - 1. Slab on grade.
 - 2. Foundations, footings
- B. Related Sections include the following:
 - 1. Section 31 23 00 – Excavation and Fill: Earthwork and drainage fills under slabs-on-grade.

1.02 ACTION SUBMITTALS

- A. Prepare the following submittals in accordance with Section 01 33 00 – Submittal Procedures.
- B. Product Data: Submit manufacturer's data on component and accessory items including cement, fly ash, admixtures, joint materials, bonding agent, curing materials, floor treatment, floor sealer, perimeter insulation, and self-leveling underlayment.
 - 1. Include installation instructions where applicable.
- C. Mix Design: Prepare and submit design mixes for each type of concrete. Use an independent testing facility acceptable to the Architect for testing the compressive strength of the proposed mix designs. Submit compression test results for each design mix. Test report must clearly indicate design mix for which it applies.
- D. Shop drawings for reinforcement detailing fabricating, bending, and placing concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures."
- E. Laboratory test reports for concrete materials and mix design test required in "Quality Control Testing During Construction" article in this section.
- F. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
 - 1. Cementitious materials and aggregates.
 - 2. Steel reinforcement and reinforcement accessories.
 - 3. Admixtures
 - 4. Curing materials
 - 5. Bonding agents
 - 6. Repair materials

1.03 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified:
 - 1. American Concrete Institute:
 - a. ACI 117 "Standard Tolerances for Concrete Construction and Materials."
 - b. ACI 211.1 "Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete."
 - c. ACI 212 "Chemical Admixtures for Concrete."
 - d. ACI 301, "Specifications for Structural Concrete"
 - e. ACI 302.1R "Guide for Concrete Floor and Slab Construction."
 - f. ACI 303.1, "Specification for Cast-in-Place Architectural Concrete."
 - g. ACI 304R "Guide for Measuring, Mixing, Transporting, and Placing Concrete."
 - h. ACI 305 "Hot Weather Concreting."
 - i. ACI 306 "Cold Weather Concreting."

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- j. ACI 308 "Standard Specification for Curing Concrete."
- k. ACI 311.4R "Guide for Concrete Inspection."
- l. ACI 318 "Building Code Requirements for Structural Concrete and Commentary"
- 2. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice."
- 3. American Society for Testing and Materials:
 - a. ASTM C33 "Standard Specification Concrete Aggregates."
 - b. ASTM C94 "Standard Specification for Ready-Mix Concrete."
 - c. ASTM C260 "Standard Specification for Air Entraining Admixtures for Concrete."
 - d. ASTM C494 "Standard Specification for Chemical Admixtures for Concrete."
 - e. ASTM C309 "Standard Specification for Liquid Membrane – Forming Compounds for Curing Concrete."
- 4. ASTM C1116 "Standard Specification for Fiber Reinforced Concrete and Shotcrete."
- 5. ASTM C1315 "Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete."
 - a. ASTM E1155 "Determining Floor Flatness and Levelness Using F-Number System."
- B. Installer Qualifications: An experienced installer who has completed concrete Work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
- D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 – Project Coordination.
 - 1. Before submitting design mixes, review concrete mix design and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete and **related products to attend**, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixes.
 - c. Ready-mix concrete producer.
 - d. Concrete subcontractor.

1.04 COORDINATION

- A. Trades requiring inserts and sleeves for their work shall furnish same for installation as Work under this Section. Delivery of inserts and sleeves for installation, as Work under this Section shall be timed so as not to cause delay in the progress of this Work.

1.05 PROJECT CONDITIONS

- A. Cold-Weather Placement: Comply with provisions of ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
 - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.
 - 4. Do not use set-control admixtures unless otherwise accepted in mix design.
 - 5. A nonchloride accelerating admixture shall be used in all concrete placed in ambient temperatures below 40 degrees F.
- B. Hot-Weather Placement: Comply with provisions of ACI 305R and as follows when hot weather conditions exist.

1. Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90 deg F. Mixing water may be chilled or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.
3. Fog spray forms, reinforcing steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without puddles or dry areas.
4. Do not use retarding admixtures unless otherwise accepted in mix design.

PART 2 – PRODUCTS

2.01 FORM-FACING MATERIALS

- A. Furnish formwork and form accessories according to ACI 301.
- B. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
 1. Plywood, metal, or other approved panel materials.
 2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
 - a. High-density overlay, Class 1, or better.
 - b. Medium-density overlay, Class 1, or better, mill-release agent treated and edge sealed.
- C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch minimum.
- D. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.02 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- B. Plain-Steel Wire: ASTM A 82/A 82M, as drawn.
- C. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, fabricated from as-drawn steel wire into flat sheets.
- D. Deformed-Steel Welded Wire Reinforcement: ASTM A 497/A 497M, flat sheet.
- E. Epoxy coated reinforcing steel: ASTM A775.

2.03 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150, Type I.
 1. Use one brand of cement throughout Project unless otherwise acceptable to Architect.
 2. Use Portland cement made by a well-known acceptable manufacturer and produced by not more than one plant for duration of project. Minimum cementitious content shall be the following: 564 pounds for 4000 psi air-entrained concrete; 517 pounds for 4000 psi non air-entrained concrete; and 423 pounds for 3000 psi non air-entrained concrete.
- B. Fly Ash: ASTM C618-89A, Type C or F, may be substituted for up to 20 percent of the total cementitious materials in all concrete mixes unless otherwise noted.
- C. Normal-Weight Aggregates: ASTM C 33 and as specified. For exposed exterior surfaces, do not use fine or coarse aggregates that contain substances that cause spalling.
 1. Local aggregates not complying with ASTM C33, class 4S, but which have shown by special test or actual service to produce concrete of adequate strength and durability, may be used when acceptable to the Architect.
 2. Nominal Maximum Aggregate Size: Not exceeding 1-1/2 inches, uniformly graded.
 3. Coarse Aggregate: Clean, uncoated, processed aggregate containing no clay, mud, loam, or foreign matter, as follows:

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- a. Crushed stone, processed from natural rock or stone.
 - b. Washed gravel, either natural or crushed. Use of pit or bank-run gravel is not permitted.
 - c. Maximum Aggregate Size: Not larger than one-fifth of narrowest dimension between sides of forms, one-third of depth of slabs, nor three-fourths of minimum clear spacing between individual reinforcing bars or bundles of bars or 1-½" nominal size, whichever is stricter.
 - d. Exterior concrete shall have crushed limestone aggregate.
- 4. Lightweight Aggregate: ASTM C 330, 3/8-inch (10-mm) nominal maximum aggregate size.
 - 5. Aggregate Supply: Provide aggregates from one source of supply to ensure uniformity in color, size, and shape.
- D. Water: Potable and complying with ASTM C 94.

2.04 ADMIXTURES

- A. General: Admixtures certified by manufacturer to contain no more than 0.1 percent water-soluble chloride ions by mass of cement and to be compatible with other admixtures. Do not use admixtures containing calcium chloride.
- B. Air-Entraining Admixture: ASTM C 260.
- C. Water-Reducing Admixture: ASTM C 494, Type A.
- D. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.
- E. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E.
- F. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.

2.05 REINFORCING MATERIALS

- A. Reinforcing Bars: ASTM A 615 Grade in accordance with Structural General Notes.
- B. Steel Wire: ASTM A82, plain, cold-drawn steel.
- C. Welded Wire Fabric: ASTM A 185, welded steel wire fabric. Refer to Structural General Notes.
- D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete, and as follows:
 - 1. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.
 - 2. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected or CRSI Class 2 stainless-steel bar supports.
- E. Joint Dowel Bars: Plain-steel bars, ASTM A 615, Grade 60. Cut bars true to length with ends square and free of burrs.
- F. Mechanical Bar Splices: Anchorage system consisting of dual-sleeve steel component for splicing two pieces of reinforcing. Size per bar diameter.
 - 1. Products: Provide product of one of the following:
 - a. Cadweld Rebar Splice as manufactured by Erico Products Inc., Cleveland, OH.
 - b. BarLoc Rebar Connectors as manufactured by Heckman Building Products, Chicago, IL.

2.06 RELATED MATERIALS

- A. Drainage Fill: Washed, narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D 488; coarse-aggregate grading size 57; with 100 percent passing a 1 inch sieve and not more than 8 percent passing a No. 200 sieve.
- B. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber, or ASTM D 1752, cork or self-expanding cork.
- C. Bonding agent – Sika Armatec 110 or approved equivalent.

2.07 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.
- F. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

2.08 CONCRETE MIXES

- A. Comply with ACI 301 requirements for concrete mixtures.
- B. Prepare design mixes, proportioned according to ACI 301, for normal-weight concrete determined by either laboratory trial mix or field test data bases, as follows:

CONCRETE SCHEDULE		
ITEM OR STRUCTURE	FINISH	COMPRESSIVE STRENGTH AND OTHER REQUIREMENTS
Exterior walks, stoops, steps, aprons, and curbs; exterior formed concrete exposed to view; exterior concrete not otherwise indicated	NsBrm-Fn (Horizontal) Grt-CI-Fn (Vertical)	4500 P.S.I. at 28 days Air Entrainment = 4.5% – 7.5%* Max W/C Ratio = 0.45 Min Portland Cement = 564 lb/c-yd
Trench footings, footings, and interior foundation	RfFm-Fn SmFm-Fn, if exposed	4000 P.S.I. at 28 days Max W/C, Ratio = 0.50 Min Portland Cement = 470 lb/c-yd
Foundation retaining walls exposed to exterior, exterior paving	RfFm-Fn SmFm-Fn, if exposed	4000 P.S.I. at 28 days Air Entrainment = 4.5% – 7.5%* Max W/C Ratio = 0.48 Min Portland Cement = 564 lb/c-yd Mid-Range Water Reducer Required
Concrete not otherwise indicated	RfFm-Fn SmFm-Fn, if exposed	4000 P.S.I. at 28 days Max W/C Ratio = 0.45 Min Portland Cement = 470 lb/c-yd ** Mid-Range Water Reducer Required
Lean concrete fill under footings and encasement of underground utilities or connections	N/A	1500 P.S.I. at 28 days Min Portland Cement=376 lb/c-yd

2.09 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.10 CONCRETE MIXING

- A. Ready-Mixed Concrete: Comply with the requirements of ASTM C94 and as herein specified.
- Addition of water to the batch will be permitted only to replace water lost due to evaporation or with verification the design water/cement ratio has not been exceeded and only under the direct control of the concrete testing agency field representative. All water added at the site to be noted on concrete field inspection report. All tests on concrete to be performed after water is added.
 - During hot weather or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C94 may be required.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Preplacement Observation: Before placing concrete, observe and complete the formwork installation, reinforcing steel, and items to be embedded or cast-in. Notify other crafts to permit the installation of their work; cooperate with other trades in setting such work, as required.
- Observe soil at bottom of foundation systems, which will be subject to testing for soil bearing value by the testing laboratory, as directed by the Architect. Place concrete immediately after approval of foundation excavations.
 - Observe underslab drainage course areas that were subject to testing for soil bearing value by the testing laboratory as required by Architect. Place concrete immediately after approval of underslab compaction tests.
- B. Material placement for exterior concrete stairs and ramps:
- Install and properly anchor the slab welded wire fabric.
 - Position waterstops and expansion joint fillers where indicated on the Drawings and as recommended by manufacturer. Special precautions shall be taken to avoid collapse during installation.

- C. Under slabs-on-grade, place drainage course on prepared subbase and as follows:
 - 1. Compact 4 inch drainage course to required cross sections and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

3.02 FORMWORK

- A. Design, erect, support, brace, and maintain formwork according to ACI 301, to support vertical, lateral, static, and dynamic loads that might be applied until concrete structure can support such loads. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork construction tolerances and surface irregularities complying with the following ACI 347 limits:
 - 1. Provide Class A tolerances for concrete surfaces exposed to view.
 - 2. Provide Class C tolerances for other concrete surfaces.
- B. Construct forms to sizes, shapes, lines, and dimensions shown and to obtain accurate alignment, location, grades, level, and plumb work in finished structures. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent cement paste from leaking.
- C. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like for easy removal. Chamfer exposed corners and edges as indicated, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.
- D. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in the Work and to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.
- E. Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- F. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.03 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 1. Install anchor bolts, accurately located, to elevations required.
 - 2. Install reglets to receive top edge of foundation sheet waterproofing if required by manufacturer, and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

3.04 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
 - 1. Avoid cutting or puncturing vapor retarder/barrier during reinforcement placement and concreting operations. Repair damages before placing concrete.
- B. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.
- C. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials that reduce or destroy bond with concrete.
- D. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as approved by Architect.

- E. Place reinforcement to maintain minimum coverages as indicated for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

3.05 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Contraction Joints in Slabs-on-Grade: Form weakened-plane, sawed contraction joints, sectioning concrete into areas as indicated. Where not specifically indicated, joint shall be 2 times thickness of slab. For exterior, max 10' C/C. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness.
- C. Isolation Joints: Install joint-filler strips at junctions with slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
 - 1. Extend joint fillers full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.

3.06 WATERSTOPS

- A. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, bonding or mechanically fastening and firmly pressing into place. Install in longest lengths practicable.

3.07 CONCRETE PLACEMENT

- A. Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.
- B. General: Comply with ACI 304 and as herein specified.
 - 1. Deposit concrete, continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness within the section. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete as nearly as practicable to its final location to avoid segregation due to rehandling or flowing.
 - 2. Concrete shall be completely discharged within 1-1/2 hours after entering the conveying drum.
 - 3. Pumping methods using steel or plastic pipelines will be permitted. Aluminum alloy lines shall not be used. Minimum pipe diameter allowed for pumping shall be 3 inches.
 - 4. Pumped Concrete: Comply with ACI 304.
- C. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers no deeper than 24 inches and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
 - 1. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete complying with ACI 309R.
 - 2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the machine. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix to segregate.
- D. Placing Concrete Slabs: Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until completing placement of a panel or section is complete.
 - 1. Deposit and consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 - a. Consolidate concrete placed against bulkheads of slabs on ground, as specified for formed concrete structures. Consolidate concrete in remainder of slabs by vibrating bridge screeds, roller pipe screeds, or other acceptable methods. Limit time of vibrating consolidation to prevent bringing excess fine aggregate to surface.

2. Slope surfaces uniformly where required.
3. Bring slab surfaces to the correct level with a straightedge and strikeoff. Screeds are required for floor slab work. Use highway straight edge to smooth the surface, leaving it free of humps or hollows. Use of bull floats or darbies will be allowed in conjunction with highway straight edge procedures. Do not sprinkle water on the plastic surface. Do not disturb the slab surfaces prior to beginning finishing operations.
4. Maintain reinforcing in the proper position during concrete placement operations. Welded wire fabric may be placed in the plastic concrete after the initial screeding operation. If so placed, the surface shall be screeded, struck off and otherwise finished to correct surface irregularities caused by the placing of the reinforcing.
5. Bonding: Roughen surfaces of set concrete at joints, except where bonding is obtained by use of concrete bonding agent, and clean surfaces of laitance, coatings, loose particles, and foreign matter. Roughen surfaces to expose bonded aggregate uniformly and to not leave laitance, loose particles of aggregate, or damaged concrete at surface.
6. Work edges of exterior slabs, gutters, back top edge of curb, and formed joints with an edging tool, and round to 1/2 inch radius, unless otherwise shown. Eliminate tool marks on concrete surface.
7. Do not remove forms for 24 hours after concrete has been placed, unless otherwise acceptable to Architect. After form removal, clean ends of joints and point up minor honeycombed areas. Remove and replace areas or sections with major defects, as directed by Architect.

3.08 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched. Remove fins and other projections exceeding 1/2 inch (13 mm).
 1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Remove fins and other projections exceeding 1/8 inch (3 mm).
 1. Apply to concrete surfaces exposed to public view, or to receive a rubbed finish.
- C. Rubbed Finish: Apply the following rubbed finish, defined in ACI 301 (ACI 301M), to smooth-formed finished as-cast concrete where indicated:
 1. Smooth-rubbed finish.
 2. Grout-cleaned finish.
 3. Cork-floated finish.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.09 FINISHING UNFORMED SURFACES

- A. General: Comply with ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Screed surfaces with a straightedge and strike off. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane before excess moisture or bleedwater appears on surface.
- C. Do not further disturb surfaces before starting finishing operations.
- D. Scratch Finish: Apply scratch finish to surfaces indicated and surfaces to receive concrete floor topping or mortar setting beds for ceramic or quarry tile, portland cement terrazzo, and other bonded cementitious floor finishes, unless otherwise indicated.
- E. Float Finish: Apply float finish to surfaces indicated, to surfaces to receive trowel finish, and to floor and slab surfaces to be covered with fluid-applied or sheet waterproofing, fluid-applied or direct-to-deck-applied membrane roofing, or sand-bed terrazzo.
- F. Trowel Finish: Apply a hard trowel finish to surfaces indicated and to floor and slab surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film-finish coating system.

- G. Trowel and Fine-Broom Finish: Apply a partial trowel finish, stopping after second troweling, to surfaces indicated and to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set methods. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.
- H. Nonslip Broom Finish: Apply a nonslip broom finish to surfaces indicated and to exterior concrete platforms, steps, and ramps. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route.

3.10 TOLERANCES

- A. Comply with ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

3.11 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Begin curing after finishing concrete, but not before free water has disappeared from concrete surface.
- D. Curing Methods: Cure formed and unformed concrete for at least seven days by a curing compound.
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.12 REMOVING FORMS

- A. General: Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form-removal operations, and provided curing and protection operations are maintained.
- B. Formwork supporting weight of concrete, such as beam soffits, joists, slabs, and other structural elements, may not be removed in less than 14 days or until concrete has attained at least 75 percent of design minimum compressive strength at 28 days. Determine potential compressive strength of in-place concrete by testing field-cured specimens representative of concrete location or members.
- C. Form-facing material may be removed 4 days after placement only if shores and other vertical supports have been arranged to permit removal of form-facing material without loosening or disturbing shores and supports.

3.13 FIELD QUALITY CONTROL

- A. Refer to Section 01 45 00 – Quality Requirements.
- B. Testing Agency: Engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article.

- C. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements.
- D. Concrete:
 - 1. Test Concrete in accordance with ACI 301 and as specified.
 - 2. Inspect placement of all reinforcement in footings prior to placement of concrete. Confirm compliance to the approved steel reinforcement drawings.
 - 3. During progress of work, Testing Agency shall mold cylinders and conduct compressive strength and other tests as follows:
 - a. For each strength test, prepare 4 standard cylinders in accordance with ASTM C31. Mold and store cylinders as required for laboratory cured test specimens except when field cured test specimens are required.
 - b. Make one strength test for each 50 cubic yards or fraction thereof of each class of concrete placed in any one day.
 - c. Each strength test shall have one cylinder tested at 7 days and two at 28 days and one retained at the laboratory for later testing, if required. Strength tests of high-early-strength concrete shall have cylinders tested at 3 and 7 days. Tests shall be conducted in accordance with ASTM C 39.
 - d. Determine air content of normal weight concrete for each strength test in accordance with ASTM C231 for each 20 cubic yards of exterior concrete flat-work placed.
 - e. Check concrete for compliance with other admixture requirements of the specifications.
 - f. Perform slump tests daily in accordance with ACI 301, and on every fifth truckload. Slump tests shall always be made from the same batch from which strength tests were made.
 - 4. Evaluate concrete strength tests in accordance with ACI 214 "Recommended Practice for Evaluation" of Compression Test Results of Field Concrete". Compressive strength of concrete shall conform to the following criteria:
 - a. The average of any 3 consecutive strength tests of laboratory cured specimens for each class of concrete shall exceed or equal the specified strength for that class.
 - b. Not more than 10 percent of the strength tests shall have values less than the specified strength. No individual test shall have value 500 psi less than specified strength.
 - 5. If compressive strength tests fail to meet the above minimum requirement, concrete represented by such tests shall be considered questionable and shall be subjected to further testing at Contractor's expense as follows:
 - a. Core samples shall be secured, prepared and tested in accordance with ASTM C42.
 - b. If core tests fail to meet strength requirement or the taking of core samples is not practical, Architect shall have the authority to order load tests to be conducted and the results evaluated in accordance with ACI 318.
 - c. Failure of any portion of the structure to pass a load test will result in rejection of such portion and Contractor shall remove and reconstruct and condemned areas at his expense.

3.14 REPAIRS

- A. Remove and replace concrete that does not comply with requirements in this Section, at no additional cost to Owner.

END OF SECTION

SECTION 04 01 20.91
MASONRY CLEANING

PART 1 – GENERAL

1.01 SUMMARY

- A. Work of this Section includes cleaning of the existing brick and stone masonry surfaces indicated as within scope of work as identified on the Drawings and herein, and including but not limited to the following categories of work:
 - 1. Gentle cleaning exterior exposed masonry surfaces, including brick masonry and limestone.
 - 2. Spot cleaning rust stains, removal of biological growth, gypsum deposits, pigeon repellent, and other foreign matter.
 - 3. Other applications as required.
- B. Related Sections:
 - 1. Section 01 35 91 – Special Procedures for Historic Treatment
 - 2. Section 04 01 20.91 – Masonry Restoration
 - 3. Section 07 92 00 – Joint Sealants: Sealing joints in restored masonry construction.

1.02 REFERENCES AND STANDARDS

- A. Publications listed below shall be the most recent issue and will form a part of this Specification to extent referenced. Publications are referred to in text by designation only.
- B. Protection of Site and Historic Properties
 - 1. All work shall be performed in accordance with the "Secretary of the Interior's Standards for Rehabilitation, "U.S. Department of the Interior, National Park Service, 1995." They can be found at http://www.nps.gov/hps/tps/standguide/rehab/rehab_standards.htm.
 - 2. Comply with US Dept. of Interiors Historic Preservation Brief #1 "Assessing, Cleaning, and Water Repellent Treatment for Historic Masonry Buildings"

1.03 ACTION SUBMITTALS

- A. Prepare the following submittals per requirements of Section 01 33 00 – Submittal Procedures.
- B. Submit product data for each product indicated. Include recommendations for application and use. Include test reports and certifications substantiating that products comply with requirements.
 - 1. Submit certifications by the producers of the materials, stating that materials supplied comply with the requirements of these specifications and the appropriate standards.
 - 2. Submit written verification that specified items will be used and provide purchase orders, shipping tickets, receipts, etc. to verify that specified materials were ordered and received.
- C. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- D. Restoration program for each phase of the restoration process, including protection of surrounding materials on the structure and Project site during operations. Describe in detail the materials, methods, equipment, and sequence of operations to be used for each phase of the restoration work.
 - 1. If alternative materials and methods to those indicated are proposed for a phase of restoration work, provide a written description, including evidence of successful use on other comparable projects, and a testing program to demonstrate their effectiveness for this Project.
 - 2. Cleaning program indicating cleaning process, including protection of surrounding materials on structure and Project site, and control of runoff during operations. Describe in detail the materials, methods, and equipment to be used.

1.04 QUALITY ASSURANCE

- A. In addition to all other requirements, all Work of this Section shall be performed under the guidelines of the Secretary of the Interior's *Standards for the Treatment of Historic Properties*. While Work under this Contract is in progress, protect existing building, grounds, contents, and occupants, including those on adjacent property, whether private or public, from damage or harm.
 - 1. It is the intent of this Section that:
 - a. All repair and replacement materials shall match remaining historic construction in all physical and visual aspects including material, form, color, texture and workmanship.
 - b. All work will be done using the gentlest methods available.
 - c. Sound historical materials will not be put at risk due to the work of this section.
 - 2. Objective: The objective of masonry cleaning is to remove dirt, grime and coatings from masonry without damaging underlying material and to give all masonry a clean, uniform appearance without blotches, streaks, runs, or any other kind of spotty appearance. Too aggressive cleaning shall not be acceptable.
- B. Quality of craftsmanship is essential to the success of the restoration of the exterior of this building. Careful attention must be paid to every aspect of the process; the proper preparation and protection, positioning of apparatus, dwell time for water mist application, and cleanup. Shoddy or inexact installation will not be permitted.
- C. The masonry contractor shall be a masonry restoration and repair firm that has completed work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
 - 1. Field Supervision: Maintain an experienced full-time on-site supervisor during all times that work is in progress for the full duration of the project. The work shall be managed on a daily basis by a foreman, on-site at all times.
 - 2. Restoration Worker Qualifications: Persons who are experienced and specialize in restoration work of types they will be performing. When masonry units are being patched, assign at least one worker among those performing patching work who is trained and certified by manufacturer of patching compound to apply its products.
- D. Manufacturer's Approval of Methods: Obtain written approval from the cleaning materials manufacturer for proposed cleaning methods, specifically referencing this Project. Require chemical cleaning manufacturer's representative to visit site to evaluate the proposed methods.
 - 1. A representative of the chemical cleaning manufacturer shall inspect the progress of the work at critical stages to determine that conditions for cleaning is progressing in accordance with manufacturer's approved procedures. Critical stages are defined as commencement of cleaning operations, once during progress of cleaning, and at completion of cleaning. Provide copy of chemical cleaning manufacturer's inspection reports for each of the critical stages within seven days of the commencement of work.
- E. An adequate and clean supply of water must be established prior to Work. Use only clean, potable water, free from minerals, oils, acids, salts, and organic materials that could cause staining or leave detrimental residues on surfaces of the masonry.

1.05 PRE-CONSTRUCTION CONFERENCE

- A. Convene a conference two weeks prior to commencing work of this section. Require attendance of parties directly affecting Work of this Section.
 - 1. Review methods and procedures related to repairing stone masonry, but not limited to, the following:
 - a. Verify contractors' personnel, equipment, and facilities needed to make progress and avoid delays.
 - b. Materials, material application.
 - c. Review mockups
 - d. Quality-control program.

1.06 MOCK-UPS

- A. Prior to start of general masonry restoration, prepare the following sample mock-ups where indicated by Architect. Obtain Architect's acceptance of visual qualities before proceeding with the Work. Retain approved mockups during construction in undisturbed condition, suitably marked as a standard for judging completed Work.
- B. Prepare field mockups for restoration and cleaning procedures to demonstrate aesthetic effects and qualities of materials and execution. Use materials and methods proposed for completed Work and prepare mockups under same weather conditions to be expected during remainder of Work. Prepare the following sample mock-ups where indicated by Architect. Obtain Architect's acceptance of visual qualities before proceeding with the Work. Retain approved panels during construction in undisturbed condition, suitably marked as a standard for judging completed Work.
 - 1. Cleaning: Prepare samples approximately 50 sq. ft. in area for two (2) different types of surface conditions for each type of masonry (stone, brick, etc.) as agreed upon with the Architect.
 - a. Masonry Cleaning: In an area designated by the Architect, carry out a complete water and chemical cleaning of a soiled area representative of the staining on the building. Employ specified materials and methods.
 - b. Alter methods, compound concentration, or dwell time to obtain a final appearance satisfactory to the Architect will be considered only after test treatments as specified herein have been performed. Demonstrate the methods are appropriate and be prepared to alter methods if methods do not achieve acceptable results.
 - c. Test cleaners and methods on samples of adjacent materials for possible adverse reactions, unless cleaners and methods are known to have a deleterious effect. Allow a waiting period of not less than 7 days after completion of sample cleaning to permit a study of sample panels for negative reactions.
 - 2. Obtain from the manufacturer a written statement referencing this Project in which the manufacturer states that, in their opinion and after field inspection of the masonry to be cleaned, the products specified are correct and appropriate for use with the application method specified in Part III of this Section.
 - 3. An adequate and clean supply of water must be established prior to Work. Use only clean, potable water, free from minerals, oils, acids, salts, and organic materials that could cause staining or leave detrimental residues on surfaces of the masonry.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in manufacturer's original and unopened containers, labeled with type and name of product and manufacturer.
- B. Comply with manufacturers' written instructions for minimum and maximum temperature requirements for storage.

1.08 PROJECT CONDITIONS

- A. Clean masonry surfaces only when air temperature is 40 deg F and above and will remain so for at least 7 days after completion of cleaning.

1.09 SEQUENCING AND SCHEDULING

- A. Perform masonry restoration work in the following sequence:
 - 1. Clean masonry surfaces with cleaners.
 - 2. Remove plant growth.
 - 3. Remove coatings.
 - 4. Repair existing masonry, including replacing existing masonry with new masonry materials.
 - 5. Rake out joints that are to be repointed.
 - 6. Point mortar joints.
 - 7. Install sealants.
 - 8. Perform final cleaning.
- B. As scaffolding is removed, patch anchor holes used to attach scaffolding. Patch holes in masonry units using specified packaged patching mortar of color to match existing brickwork. Comply with all

manufacturer instructions and weather limitations set forth above. Patch holes in mortar joints to comply with repointing requirements described below.

PART 2 – PRODUCTS

2.01 MANUFACTURER/ PRODUCTS

- A. Subject to compliance with requirements, provide products of one of the following:

Note: The products indicated in the following paragraph represent the least aggressive cleaners that would be acceptable to produce the desired level of masonry cleaning. However, actual formulations and application procedures will be established through in-place mockups per the requirements in the Article "Mock-Ups".

1. Basis of Design: PROSOCO, Inc., Lawrence, KS
 - a. Limestone Cleaning Product: Enviro Klean BioKlean Cleaner and Bio Klean Activator with Sure Klean Limestone & Masonry Afterwash.
 - b. Heavy Stains: Sure Klean Light Duty Restoration Cleaner.
 - c. Limestone (Vanadium Staining): ProSoCo Sure Klean T-515 Copper Stain Remover
 2. EaCo Chem, Forestville, PA.
 3. DuMond Chemicals, New York, NY
 4. Diedrich Technologies, Oak Creek, WI
- B. Products of the other named manufacturers are acceptable provided they equal or exceed the material requirements and functional qualities of the specified products. Requests for Architect's approval must be accompanied by complete technical data for evaluation.

2.02 CLEANING MATERIALS

- A. Water: Clean, potable and free from minerals, oils, acids, salts and organic materials that could cause staining or leave detrimental residues.
- B. Mild Acidic Cleaner: Manufacturer's standard mildly acidic cleaner containing no hydrochloric, hydrofluoric, or sulfuric acid; or chlorine bleaches formulated for cleaning limestone.
1. Available Products:
 - a. ProSoCo; Enviro Klean BioKlean.
 - b. Diedrich Technologies Inc.; Envirorestore 100.
 - c. Dumond Chemicals, Inc.; Safe n' Easy Heavy Duty Restoration Cleaner.
- C. Liquid Strippable Masking Agent: Manufacturer's standard liquid, film-forming, strippable masking material for protecting glass, metal, and polished stone surfaces from damaging effects of acidic and alkaline masonry cleaners.
1. Available Products:
 - a. ProSoCo; Sure Klean Strippable Masking.
 - b. American Building Restoration Products, Inc.; LM 130 Acid Shield.
 - c. Diedrich Technologies Inc.; Diedrich Acid Guard.
 - d. Price Research, Ltd.; Price Mask.
- D. Miscellaneous Materials and Equipment:
1. Tools: Plastic, wooden or stainless steel.
 2. Pressure washer: Standard pressure water rinsing equipment operated at 400-800 psi, 4 gallons/min with a stainless steel fan tip with a 30-45 degree spray nozzle.
 3. Brushes: Soft bristled nylon, coarse nylon bristle, soft and hard natural fiber brushes of assorted size and geometry.

PART 3 – EXECUTION

3.01 PROTECTION

- A. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm resulting from masonry restoration work.
 - 1. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during course of restoration work.

3.02 PREPARATION FOR MASONRY CLEANING

- A. General: Comply with chemical cleaner manufacturer's written instructions for protecting structure surfaces against damage from exposure to their products. Protect non-masonry surfaces prior to the general cleaning of the masonry. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during course of restoration and cleaning work.
- B. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from injury resulting from masonry restoration work.
 - 1. Prevent chemical cleaning solutions from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be injured by such contact.
 - 2. Do not clean masonry during winds of sufficient force to spread cleaning solutions to unprotected surfaces.
 - 3. Neutralize and collect alkaline and acid wastes for disposal off site.
 - 4. Dispose of runoff from cleaning operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations and damage to landscaping.
- C. Cover adjacent surfaces with materials that are proven to resist chemical cleaners used unless chemical cleaners being used will not damage adjacent surfaces. Use materials that contain only waterproof, UV-resistant adhesives. Protect adjacent surfaces from contact with chemical cleaners by covering them with a liquid strippable masking agent or polyethylene film and waterproof masking tape. Apply masking agent to comply with manufacturers' written instructions. Do not apply liquid masking agent to painted or porous surfaces.
- D. Prior to and during the cleaning process, monitor the pH of random areas of the masonry and of the rinsing water. Rinsing or neutralizing of the masonry until testing confirms that no cleaning agents or other harmful contaminants remain on the masonry.
- E. General cleaning operation guidelines include the following:
 - 1. Remove bird dropping, tar, old sealants, and loose surface dirt by both brushing and scraping.
 - 2. Randomly evaluate each area to be cleaned (major exposure of masonry) for relative acidity or alkalinity prior to cleaning.
 - 3. Dilute cleaning agents according to the written instructions of the manufacturer and only to concentrations that have been tested at the site and previously approved.
 - 4. Remove tar, old sealants, or patching materials not removed after general cleaning with an emulsified solvent cleaner. Use solvent cleaners in strict compliance with the manufacturer's written instructions (instructions on labels attached to the container are acceptable). Repeat as required to achieve intended results. Rinse treated surfaces to remove traces of tar, patching materials and solvent cleaner.
 - 5. If staining is evident on the masonry surface, prewet with clean water and apply the prescribed cleaning agent with masonry washing brushes. Do not permit the cleaner to remain on the surface for a time longer than specified by the manufacturer. Rinse the treated surface of cleaning residue and solubilized deposits, repeating as needed.
 - 6. Determine the relative acidity or alkalinity of the cleaned surfaces and record results. The substrate shall be neutral (pH 7).
- F. Cleaning Quality Control:
 - 1. Compile and maintain test results pertaining to the relative acidity or alkalinity of the cleaned surfaces of the structure for examination by the Architect.

2. The greatest prospect for damage to the substrate is the leaving of chemical residues associated with the cleaning process. The minimal chemical strength in cleaning is a primary objective of the restoration project.
3. Prevent damage to the masonry substrate from the use of excessive pressure during water rinsing. Excessive pressure is pressure that does harm to the substrate being cleaned.
4. The manufacturer of the cleaning agent has developed the cleaner to perform certain tasks. Deviation from the prescribed methods and procedures might compromise the end results.

3.03 WATER CLEANING

- A. Clean existing stonework using one, or a combination of the following methods:
 1. Hot-Water Wash: Clean stonework with hot water applied as follows:
 - a. Wet stone with hot water applied by sponge or low-pressure spray.
 - b. Scrub stonework using water and medium-soft brushes until soil is thoroughly dislodged and can be removed by rinsing.
 - c. Rinse with hot water to remove detergent solution and soil.
 - 1) Apply rinse by sponge or low-pressure spray.
 - d. Repeat cleaning procedure above where required to produce the cleaning effect established by mockup.
 2. Mold, Mildew, and Algae Removal:
 - a. Wet masonry with cold water applied by low-pressure spray.
 - b. Apply mold, mildew, and algae remover by brush or very low-pressure spray.
 - c. Scrub masonry with medium-soft brushes until mold, mildew, and algae are thoroughly dislodged and can be removed by rinsing. Use small brushes for mortar joints and crevices. Dip brush in mold, mildew, and algae remover often to ensure that adequate fresh cleaner is used and that masonry surface remains wet.
 - d. Rinse with cold water applied by very low-pressure spray to remove mold, mildew, and algae remover and soil.
 - e. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.
 3. Detergent Cleaning: Clean stonework with a detergent solution applied as follows:
 - a. Wet stone with hot water applied by sponge or low-pressure spray.
 - b. Scrub stonework with detergent solution using medium-soft brushes until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from mortar joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that stone surface remains wet.
 - c. Rinse with hot water to remove detergent solution and soil.
 - 1) Apply rinse by sponge or low-pressure spray.
 - d. Repeat cleaning procedure above where required to produce the cleaning effect established by mockup.

3.04 CLEANING MASONRY – GENERAL

- A. Establish that chemical cleaner used is reactive with the contaminants present and nonreactive with the underlying substrate. The cleaning process is designed to incorporate the lowest rinsing pressures and the lowest chemical concentrations practical to produce the level of cleaning desired.
- B. Store chemicals to preclude tampering, acts of vandalism, and possible injury to workmen and the public in general. Store chemicals in sealed containers in a suitable space provided by the Contractor and kept under lock and key. Vessels containing chemicals shall not be carried or hoisted to working levels in open vessels, but shall have tight covers
- C. For the purposes of this specification, the words 'clean' or 'cleaning' mean to remove contaminants from the surface and pores of the substrate. Evenly clean surface with no evidence of streaking or bleaching.
- D. Do not affect the density or porosity of the substrate during the cleaning process. The use of wire brushes, steel wool, or sandblasting or other abrasive technique is not permitted.

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- E. Submit for approval proprietary products and methods designed for the substrate being cleaned.
- F. Workmen using chemicals are required to wear protective clothing, goggles, face shields, gloves, and other clothing or equipment in compliance with governing federal and state safety codes and rules.
- G. Provide safeguards to protect the workmen of every trade and the general public and their property against injury by erecting barriers well outside the limits of wind-drifting water, detergents, acids, and other materials, however mild they might be.
- H. Take necessary precautions when chemical cleaning and pressure water washing or rinsing is in progress. Apply cleaning compounds strictly in accordance with these specifications and the written product application directions of the manufacturer. Obtain written recommendations from the manufacturer's field representative who shall visit the Project prior to issuing his advice. Obtain written approval of any substantial deviation from the agreed upon methods.
 - 1. Chemical cleaning is always done from the bottom to the top of the building.
 - 2. General cleaning of limestone shall occur sequentially during each cleaning drop.
 - 3. Employ clean potable water for washing.
 - 4. Use appropriate brushes for application of cleaners following manufacturer's directions. Use low pressure spray (20 psi) equipment for applying cleaning solutions only when recommended by manufacturer.
 - 5. Apply only the specified products to the masonry on the building in accordance with the specified requirements below. Do not mix systems. Do not apply cleaners other than those specified for limestone. Do not allow cleaning chemical to remain on the masonry for greater dwell times than specified herein or in manufacturers literature. Do not attempt to shorten the cleaning schedule by using more concentrated chemical ratios than specified herein or in manufacturers literature.
 - 6. Use a low to medium pressure (400 to 800 psi) hot or cold water spray for rinsing.
- I. Test Cleaning: Demonstrate the effect of each step of each application technique on a test panel in a location selected by the Architect. Refer to "Mockup" article. Adjust technique, with the approval of the Architect, within manufacturer's limits, to completely clean masonry of stain or soil to be removed.
- J. Removal of painted coatings shall be accomplished by application of solvent-based paint strippers such as ProSoCo Inc. Sure Klean Fast Acting Stripper or equal products to the affected masonry. Contractor shall select and demonstrate to the Architect the recommended paint stripper for use on the building masonry.

3.05 CLEANING MASONRY – PROCESS

- A. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to cleaning methods being used. Extraneous substances include paint, calking, asphalt, and tar.
- B. Prior to general cleaning, and using chemical agents (if required), the following steps are required:
 - 1. Application: Exterior surfaces only:
 - a. Obtain approval on test area from Architect before proceeding with general cleaning.
 - b. Thoroughly prewet a small area.
 - c. Apply a mixture in accordance with supplier's specifications using a soft fiber masonry cleaning brush, or a low pressure spray (50 psi maximum), Apply liberal quantities of solution.
 - d. Allow cleaning solution to remain on masonry for a time period as directed by supplier. Do not allow cleaner to dry on masonry.
 - e. Rinse thoroughly with water removing cleaning solution and solubilized matter.
 - f. If recommended by the supplier, apply a neutralizing rinse to the masonry, then wash thoroughly with clean water.
 - 2. Cleaning materials and approved suppliers are listed in the specifications; however, the Contractor must obtain written verification regarding the suitability of cleaning materials for each specific use prior to beginning work.
 - a. The written verification must state that an agent of the manufacturer has field tested the product on the appropriate areas of the structure to be cleaned and in their opinion, the products delivered are correct and proper for the intended cleaning.
 - b. Provide a source for clean water before commencing cleaning operations.
 - c. Perform cleaning operations prior to repairing masonry, or pointing mortar.
 - d. Remove biological materials from the masonry prior to general cleaning.

- C. Perform each cleaning method indicated in a manner that results in uniform coverage of surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces.
- D. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting.

3.06 CLEANING BRICKWORK AND LIMESTONE

- A. Before applying chemical cleaners, read manufacturers precautionary measures for application of chemical cleaners; mix cleaner with activator in proportions recommended by manufacturer.
 - 1. Mix 1 gallon of Cleaner with 3 gallons of water and 1 gallon of Activator to produce 5 gallons of cleaning solution.
 - 2. Apply prepared cleaning solution to a dry surface.
 - 3. Leave solution on the surface for 5-15 minutes. If solution begins to dry, reapply.
 - 4. Rinse thoroughly with clean water. If using a sponge or string mop to rinse, change rinse water often. Use moderate pressure water rinse to porous surfaces to remove soiling.
 - 5. Immediately after rinsing cleaning solution from masonry surface, apply the prepared Sure Klean® Limestone & Masonry Afterwash to the wet surface. To remove the biological growth and atmospheric soiling from the masonry surfaces.
 - 6. Let the Afterwash stay on the surface for three to five minutes.
 - 7. Pressure rinse from the bottom of the treated area to the top. Make sure to cover each portion of the masonry surface with a concentrated stream of water. To avoid streaking, keep wall surfaces immediately below area being cleaned wet and free of cleaner rundown and residues.
 - 8. For heavy brick staining, use ProSoCo Sure Klean Light Duty Restoration Cleaner. Rewet surface with clean water. Apply cleaner using a brush or roller, gently scrub to heavily soiled areas to improve results. Let dwell 5 to 15 minutes. Rinse with clean water.
- B. Vanadium Staining:
 - 1. Before applying, read "Preparation" and "Safety Information" sections in the Manufacturer's Product Data Sheet for T-515 Stain Remover. Parts A and B are mixed together into a wet paste. Do not dilute or add water to the poultice mixture.
 - 2. Always wear protective equipment when applying this compound.
 - 3. Apply at coverage rate of two square feet per pound of Part A. Approximate mix ratio is one quart Part B to one pound of Part A.
 - 4. Surface shall be dry and free of surface dirt. Using trowel or soft-fibered brush, apply at 1/8 to 1/4 inch thick coating of the poultice mixture over the stained area
 - 5. Let the poultice remain on the surface for 24 hours or until completely dry.
 - 6. After the poultice mix has dried, scrape dry poultice from the surface. Water rinse the treated area using a soft brush to remove all poultice residue. Reapplication may be necessary of severely stained areas.

3.07 FIELD QUALITY CONTROL

- A. Allow Architect use of scaffolding, as needed, to observe progress and quality of portion of the Work completed.
- B. Notify Architect in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until Architect has had reasonable opportunity to make observations of work areas at lift device or scaffold location.

3.08 FINAL CLEANING

- A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter using stiff nylon or bristle brushes and clean water, which is spray applied at a low pressure (not to exceed 400 psi).
 - 1. Using metal scrapers or brushes is not permitted.
 - 2. Using acid or alkali cleaning agents is not permitted.
- B. Remove tools, stone cleaning and stabilization equipment, machinery, and surplus material from the site.

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- C. Remove debris and surface dust from limited access spaces, including roofs, cornice, rooftops, and similar areas and items.
- D. Remove temporary protection and facilities installed during stabilization Work to protect previously completed installations.
- E. Comply with governing regulations and safety standards for cleaning operations. Remove waste materials from the site and dispose of in a lawful manner. Where extra materials of value remain after completion of associated stone cleaning and stabilization Work have become the Owner's property, dispose of these materials as directed by Architect.

END OF SECTION

SECTION 04 01 20.91
MASONRY RESTORATION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes restoration and replacement of portions or the existing brick unit masonry surfaces indicated as within scope of work as identified on the Drawings and herein, and including but not limited to the following categories of work:
 - 1. Repoint masonry
 - 2. Patch holes in brick
 - 3. Cut openings in existing masonry
 - 4. Patching existing masonry.
 - 5. Remove sealant from all masonry and stone joints.
 - 6. Stone crack repair
 - 7. Stone replacement
 - 8. Other applications as indicated.
- B. Related Sections:
 - 1. Section 01 35 91 – Special Procedures for Historic Treatment
 - 2. Section 01 43 30 – Mockups
 - 3. Section 04 01 20.52 – Masonry Cleaning.
 - 4. Section 07 92 00 – Joint Sealants: Sealing joints in restored masonry construction.

1.02 DEFINITIONS

- A. Repointing: The process of raking out (removing) mortar and replacing it with new mortar.
- B. Pointing: The process of placing new mortar in existing joint spaces, which have previously been raked out. This term does not include the raking out process.

1.03 REFERENCES AND STANDARDS

- A. Publications listed below shall be the most recent issue and will form a part of this Specification to extent referenced. Publications are referred to in text by designation only.
- B. Protection of Site and Historic Properties
 - 1. All work shall be performed in accordance with the "Secretary of the Interior's Standards for Rehabilitation, "U.S. Department of the Interior, National Park Service, 1995." They can be found at http://www.nps.gov/hps/tps/standguide/rehab/rehab_standards.htm.
 - 2. Comply with US Dept. of Interiors Historic Preservation Brief #2 – Repointing Mortar Joints in Historic Brick Buildings.
- C. Except as modified by the Project Specifications, applicable portions of the following reference standards shall govern the work. All standards latest edition as of the date of the Specifications:
 - 1. Perform Work in accordance with ACI 530 and ACI 530.1 requirements.
 - 2. Mortar:
 - a. ASTM International
 - 1) C144 Specifications for Aggregate for Masonry Mortar
 - 2) C150 Specifications for Portland Cement
 - 3) C207 Specifications for Hydrated Lime for Masonry Purposes
 - 4) C270 Specifications for Mortar for Unit Masonry
 - 5) C780 Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry
 - b. Brick Institute of America (BIA)
 - 1) BIA Technical Notes 7F – Moisture Resistance of Brick Masonry – Maintenance

- 2) BIA Technical Notes 8A – Standard Specification for Portland Cement-Lime Mortar for Brick Masonry, BIA Designation M1

1.04 ACTION SUBMITTALS

- A. Prepare the following submittals per requirements of Section 01 33 00 – Submittal Procedures.
- B. Submit product data for each product indicated including recommendations for their application and use. Include test reports and certifications substantiating that products comply with requirements.
- C. Samples for Verification: Before erecting mockup, submit samples of the following:
 - 1. Each type of exposed masonry unit to be used for replacing existing units.
 - a. For each brick type, provide straps or panels containing at least four bricks.
 - 2. Each type of sand used for pointing mortar.
 - a. For blended sands, provide samples of each component and blend.
 - b. Identify sources, both supplier and quarry, of each type of sand.
 - 3. Each type of pointing mortar in the form of sample mortar strips, 6 inches long by 1/2-inch wide, set in aluminum or plastic channels.
 - a. Include with each sample a list of ingredients with proportions of each. Identify sources, both supplier and quarry, of each type of sand and brand names if any.
 - 4. For custom blended mortars, Architect has a quantity of sample material that was blended to match the existing mortar. The material will have to be installed however, to verify that it matches the character of the existing mortar. Otherwise, the color of the mortar will have to be adjusted to provide a better match.
- D. Submit a restoration program for each phase of the restoration process, including protection of surrounding materials on building and site during operations. Describe in detail the materials, methods, and equipment to be used for each phase of the restoration work.
 - 1. If alternative methods and materials to those indicated are proposed for any phase of restoration work, provide a written description, including evidence of successful use on other comparable projects, and a testing program to demonstrate their effectiveness for this Project.

1.05 QUALITY ASSURANCE

- A. The Delaware Train Depot is a historically significant structure. In addition to all other requirements all Work of this Section shall be performed under the guidelines of the Secretary of the Interior's *Standards for the Treatment of Historic Properties*. While Work under this Contract is in progress, protect existing building, grounds, contents, and occupants, including those on adjacent property, whether private or public, from damage or harm.
 - 1. It is the intent of this Section that:
 - a. All repair and replacement materials shall match remaining historic construction in all physical and visual aspects including material, form, color, texture and installation.
 - b. As much of the historic material as possible will be saved.
 - c. All work will be done using the gentlest methods available.
 - d. Sound historical materials will not be put at risk due to the work of this section.
- B. If additional damage beyond that identified by the documents is found, bring to the attention of the Architect. Do not proceed with additional work until a Change Order has been issued to perform the additional work.
- C. Source of Materials: Obtain materials for patching, and repointing from a single manufacturer to ensure match of quality, color and texture.
- D. Accelerators or anti-freeze admixtures are specifically prohibited in the Work.
- E. Comply with the manufacturers written specifications and recommendations for mixing, application, and curing of mortars.
- F. Use materials from same manufacturer or source throughout project.

1.06 PRE-CONSTRUCTION CONFERENCE

- A. Convene a conference two weeks prior to commencing work of this section. Require attendance of parties directly affecting Work of this Section.
 - 1. Review methods and procedures related to repairing stone masonry, but not limited to, the following:
 - a. Verify contractors' personnel, equipment, and facilities needed to make progress and avoid delays.
 - b. Materials, material application.
 - c. Review mockups
 - d. Quality-control program.

1.07 MOCK-UP

- A. Prior to start of general masonry restoration, prepare the following sample mock-ups where indicated by Architect. Obtain Architect's acceptance of visual qualities before proceeding with the Work. Retain approved mockups during construction in undisturbed condition, suitably marked as a standard for judging completed Work.
- B. Prepare field mockups for restoration procedures to demonstrate aesthetic effects and qualities of materials and execution. Use materials and methods proposed for completed Work and prepare mockups under same weather conditions to be expected during remainder of Work. Prepare the following sample mock-ups where indicated by Architect:
 - 1. Test Raking and Pointing: In location indicated by the Architect, demonstrate the proposed method. Leave test area unpointed to serve as a standard. Point when directed. Rake and completely point an adjacent area of equal size to serve as a standard for pointing installation, color, and texture.
 - 2. Dutchman Repair: Demonstrate repair procedure.
 - 3. Crack Repair: Demonstrate repair procedure.
 - 4. Test Patching to Replace Damaged Brick: In a location indicated by the Architect, prepare a representative sized area to demonstrate the specified replacement method. Demonstrate specified techniques and alter method if methods do not achieve an unnoticeable and permanent replacement.
 - 5. Masonry Cleaning: Section 04 01 20.51
- C. Stone Belt Course: (Tannery)
 - 1. Prepare full size samples with proposed face finish for approval of stone selection, face finish, coursing, joint profile, and mortar color before proceeding with installation.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to project site in manufacturer's original and unopened containers and packaging, bearing labels as to type and names of products and manufacturers.
- B. Protect grout, mortar, and other materials from deterioration by moisture and temperature. Store in a dry place or in waterproof containers. Keep containers tightly closed and away from open flames. Protect liquid components from freezing.
- C. Comply with manufacturer's recommendations for minimum and maximum temperature requirements for storage.
- D. Brick Storage:
 - 1. Protect brick during storage and construction against moisture, soiling, staining, physical damage and theft.
 - 2. Handle brick to prevent chipping, breakage, soiling or other damage. Do not use pinch or wrecking bars without protecting edges of brick with wood or other rigid materials.
 - 3. Place and stack pallets of brick to distribute weight evenly and to prevent breakage or cracking of bricks.

1.09 PROJECT CONDITIONS

- A. Cold-Weather Requirements: Comply with the following procedures for masonry repair and mortar-joint pointing:

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1. When air temperature is below 40 deg F, heat mortar ingredients, masonry repair materials, and existing masonry walls to produce temperatures between 40 and 120 deg F.
 2. When mean daily air temperature is between 25 and 40 deg F, cover completed Work with weather-resistant, insulating blankets for 48 hours after repair and pointing.
 3. When mean daily air temperature is below 25 deg F, provide enclosure and heat to maintain temperatures above 32 deg F within the enclosure for 48 hours after repair and pointing.
- B. Hot-Weather Requirements: Protect restoration work when temperature and humidity conditions produce excessive evaporation of water from mortar and patching materials. Provide artificial shade and wind breaks and use cooled materials as required. Do not apply mortar to substrates with temperatures of 90 deg F and above.
1. Phase repointing during hot weather by completing process on the shady side of the building or schedule installation of materials during cooler evening hours to prevent premature evaporation of the mortar.
- C. Prevent grout or mortar used in repointing and repair work from staining face of surrounding masonry and other surfaces. Immediately remove grout and mortar in contact with exposed masonry and other surfaces.
- D. Protect sills, ledges, and projections from mortar droppings.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Restoration Mortar Repair: Subject to compliance with requirements, provide products by one of the following:
1. Cathedral Stone Products, Inc., Jahn Patching Mortar, Hanover, MD
 2. Edison Coatings, Inc., Custom SYSTEM 45, Plainville, CT.
- B. Epoxy repair material: Subject to compliance with requirements, provide products by one of the following:
1. Bonstone Materials Corporation, Mukwongao, WI
 2. Akemi North America, Doraville, GA
 3. ChemCo Systems, Inc. Redwood City, CA
 4. Micro Capsule Engineering. NSK International, Inc. Vancouver, WA.

2.02 REPLACEMENT BRICK

- A. It is the intent of this project to salvage, preserve and reuse existing brick to the greatest extent possible for this project. Reuse salvaged brick to the maximum extent possible.
- B. Should replacement brick be required due to irreparable damage, match color, texture and size of existing brick veneer with masonry units specified below.

2.03 REPLACEMENT STONE

- A. Provide replacement stone where indicate on the drawings; match color, texture and size of existing stone.

2.04 NEW STONE FOUNDATION BELT COURSE - TANNERY

- A. Provide a natural limestone veneer belt course (watertable) on a concrete stem wall. The veneer shall replicate the appearance of historic worn stone typically found on early masonry buildings.
- B. Material:
1. Veneer stone: Natural limestone, quarried to match regional historic regional stone in color and texture.
 2. Thickness: 4 inch nominal.
 3. Cut: Square in rectangular shapes.
 4. Height: Full belt course height.
 5. Length: Random lengths, minimum 12 inch; maximum 24 inch.
 6. Face finish: Lightly-tooled or bush-hammered on exposed surfaces, to resemble weathered historic stone. Finish to be approved in mockup.

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- 7. Ends: Sawn or split, with corners to match face finish.
- 8. Joints: Tight
- C. Backup wall: Concrete stem wall per structural.
- D. Mortar: Type N for veneer, with color and tooling to match historic appearance.

2.05 NEW BRICK MASONRY UNITS

- A. Face Brick: ASTM C 216 and to match existing:
 - 1. Grade and Unit Compressive Strength: Provide units with grade and minimum average net-area compressive strength matching existing brick that is remaining in wall.
 - a. Size: Custom size to match existing building brick
 - b. Grade: SW (Contractor verify).
 - c. Type: FBS (Contractor verify)
 - 2. Not less than the unit compressive strengths required to produce clay masonry construction of compressive strength matching existing brick.
 - 3. Initial Rate of Absorption: Between 5 and 30 g/ 30 sq. in. per minute when tested per ASTM C 67.
- B. Provide solid units without cores or frogs and with exposed surfaces finished for applications that would otherwise expose unfinished brick surfaces.
- C. Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.

2.06 REPOINTING MORTARS

- A. Repointing mortar shall be prepared and placed in accordance with the Department of the Interior National Park Service Cultural Resources Preservation Briefs 2, "Repointing Mortar Joints in Historic Masonry Buildings", Revised edition October 1998, and in compliance with the guidelines set forth by the Secretary of the Interior's Standards for Rehabilitation.
- B. The repointing mortar shall match the original in color, grain size, and texture. The compressive strength of the repointing mortar shall be equal or less than the compressive strength of the original mortar and surrounding brick. The replacement mortar shall contain approximately the same ingredient proportions of the original mortar.
- C. Contractor shall determine replacement mortar ingredients and mortar formulations will be established from test data gathered from the original materials sampled from site.

2.07 MORTAR MATERIALS

- A. The mortars listed in this section are formulated to approximate the mortars used in the original construction. Proportion all mortar mixes (water/solids) to obtain a workable mortar. Record and maintain all mix proportions. Specified materials are:
- B. Repair Type: Re-pointing and Re-setting existing and new stone:
 - 1. Bedding Mortar: ASTM C270; Type N
 - a. Pre-packaged; or
 - b. 1 part cement
 - c. 1 part lime
 - d. 6 parts damp, loose sand
 - 2. Pointing Mortar: ASTM C270; Type N
 - a. Pre-packaged; or
 - b. 1 part cement
 - c. 1 part lime
 - d. 6 parts damp, loose sand
 - 3. Mortar Materials:
 - a. Portland Cement: ASTM C150, Type I.
 - b. Hydrated Lime: ASTM C207, Type S, formed into lime putty

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- c. Sand: ASTM C144; use sand graded with 100% passing No.8 sieve and 95% passing No. 16 sieve.
 - d. Mortar pigment: Mineral pigments of high purity, non-fading and limeproof; color to match existing.
- 4. Mortar Color Tinting Compounds: Mineral oxide, True Tone Cement Color by Davis Colors; Tamms Concentrated Mortar Colors by Tamms Industries; A and H series by Solomon Grind-Chem Service, Inc.
- C. Repair Type: Restoration Mortar Repair:
 - 1. Jahn Restoration Mortars are premixed cementitious repair materials formulated to match the color and texture of the existing stone, and do not contain any acrylic, latex, or other synthetic polymer additives.
 - 2. Edison Custom SYSTEM 45 products are two-component, latex-modified, cementitious compounds.
 - 3. Mix the mortar with clean, potable water.
 - 4. Mortar mix design:
 - a. Basis of Design: Jahn Mix #M70 as starting point to match existing stone.
 - b. Bonstone HRM (Historic Repair Mortar)
 - c. Mimic Repair Mortar or Matrix Repair Mortar,
 - d. Custom SYSTEM 45, Type SD, to match existing stone.
 - 5. Mortars:
 - a. Cathedral Stone Products, Inc., Jahn Restoration Mortars
 - b. Edison Coatings, Inc., Custom SYSTEM 45

2.08 REPAIR MATERIALS

- A. Repair Type: Stainless Steel Dowels:
 - 1. Type 304 or 316 stainless steel dowels, in standard commercial tempers and hardness as required to sustain imposed loads and in no case less than 3/16 inch (4.5 mm) thick, complying with ASTM A666.
- B. Repair Type: Epoxy Repair Adhesives:
 - 1. Epoxy Components:
 - a. Adhesive: low viscosity, "(300-600 CPS)", two-component epoxy resin, ASTM C881, Type I and Type IV, Grade 1, Class C.
 - b. Color: Clear.
 - c. Manufacturers:
 - 1) Bonstone Materials Corp., Mukwonago, WI.
 - 2) Sika U.S., Sika Corporation, Lyndhurst, NJ
 - 3) Akemi North America, INNOCHEM, Innovative Chemicals, Doraville, GA
 - 4) Edison Coatings, Inc., Plainville, CT.
 - 2. Epoxy Adhesive Type 1: Setting anchors
 - a. Bonstone Fast-Set Extreme: Two-component, 100% solids, non-sag, knife-grade consistency, moisture tolerant, high modulus, high strength, structural epoxy adhesive.
 - 3. Epoxy Adhesive Type 2: Adhering stone to stone
 - a. Bonstone Duropoxi: Two-component, 100% solids, chemical resistant, exterior grade epoxy adhesive. Non-sag gel epoxy.
 - 4. Epoxy Adhesive Type 3: Crack injection
 - a. Bonstone Crack Repair 31: Two-component, exterior grade, clear, injection epoxy meeting ASTM C-881, Type I, II; Class C, Grade 1.
- C. Repair Type: Epoxy Crack Patch: Restoration mortar for sealing off cracks.
 - 1. Bonstone: Historic Repair Mortar (HRM)
 - 2. Bonstone Last Patch

2.09 FACTORY MIXING

- A. Mortar supplier shall pre-blend all mortar materials into single containers in a factory-controlled environment. All ingredients shall be converted from volume measurements to weight measurements to ensure quality production of the mortar. Mixing of individual mortar ingredients at the construction site shall not be permitted.
- B. Mortar supplier shall mark all containers including manufacturing date and batch number. Manufacturer shall maintain production-sampling procedures for each batch for quality control purposes.
- C. Mortar supplier shall match the color and texture of mortar to the original mortar
- D. Mortar supplier shall supply ready-mixed mortar samples sufficient in size for mock-up samples at the site.
- E. Do not retemper pre-blended mortar.

2.10 MASONRY ACCESSORIES

- A. Sealant: Coordinate with Section 07 92 00. As required herein and to match existing in formula, color and texture.
 - 1. Pre-molded Joint Filler (as applicable): Rigid urethane foam, thickness as recommended by manufacturer based on joint width.
- B. Flexible Flashing: For flashing not exposed to the exterior, use the following, unless otherwise indicated:
 - 1. Copper-Laminated Flashing: 5-oz./sq. ft. copper sheet bonded with asphalt between 2 layers of glass-fiber cloth. Use only where flashing is fully concealed in masonry.
 - a. Standard Products:
 - 1) Sandell Manufacturing Co., Inc.; Copper Fabric Flashing.
 - 2) York Manufacturing, Inc.; York Copper Fabric Flashing.

PART 3 – EXECUTION

3.01 PROTECTION

- A. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm resulting from masonry restoration work.
 - 1. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during course of restoration work.
- B. Prevent mortar from staining face of surrounding masonry and other surfaces.
 - 1. Cover sills, ledges, and projections to protect from mortar droppings.
 - 2. Keep wall area wet below rebuilding and pointing work to discourage mortar from adhering.
 - 3. Immediately remove mortar in contact with exposed masonry and other surfaces.
 - 4. Clean mortar splatters from scaffolding at end of each day.

3.02 UNUSED ANCHOR REMOVAL

- A. Remove stone anchors, brackets, and other extraneous items no longer in use unless identified as historically significant or indicated to remain.
 - 1. Remove items carefully to avoid spalling or cracking stone.
 - 2. Where directed, if an item cannot be removed without damaging surrounding stone, do the following:
 - a. Cut or grind off item approximately 3/4 inch beneath surface and core drill a recess of same depth in surrounding stone as close around item as practical.
 - b. Immediately paint exposed end of item with two coats of antirust coating, following coating manufacturer's written instructions and without exceeding manufacturer's recommended dry film thickness per coat. Keep paint off sides of recess.
 - 3. Patch the hole where each item was removed unless directed to remove and replace the stone unit.

3.03 BRICK REMOVAL AND REBUILDING

- A. Carefully remove by hand, with hammer and chisel at locations indicated, bricks that are damaged, spalled, or deteriorated. Cut out full units from joint to joint and in a manner to permit replacement with full size units without damaging surrounding masonry.
- B. Support and protect remaining masonry that surrounds removal area. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition.
- C. Clean the remaining cavity of loose mortar and other particles in preparation for replacement. Rebuild backup and substrate as required to replace any unsound materials that was removed.
- D. Ensure anchors, ties, reinforcing, stone cramps and dowels, and flashings are correctly located and built-in.
- E. Re-use non-damaged masonry to the fullest extent possible. Integrate new replacement masonry into existing masonry.
- F. Lightly wet the exposed brick surfaces. Install new custom brick to replace removed brick. Fit replacement units into bonding and coursing pattern of existing brick.
- G. Lay replacement brick with completely filled bed, head, and collar joints. Butter ends with sufficient mortar to fill head joints and shove into place. Wet clay bricks that have ASTM C 67 initial rates of absorption (suction) of more than 30 g per 30 sq. in. per min. (30 g per 194 sq. cm per min.). Use wetting methods that ensure units are nearly saturated but surface dry when laid. Maintain joint width for replacement units to match existing units.
- H. Build new masonry to the full thickness as shown on drawings.
- I. Lay masonry plumb and true following the coursing and patterns of the existing masonry. Level off work at required heights.
 - 1. Do not build faster than the weak, slow setting lime mortar will allow.
 - 2. Blend new work into existing work smoothly with now lines of demarcation and no change of pattern or coursing.
 - 3. Rake out mortar used for laying brick before mortar sets and point new mortar joints in repaired area to comply with requirements for repointing existing masonry. Joints 3/8 inch in width shall be raked to a depth of 1 inch.
- J. If adjustments are required, remove units, clean off mortar and reset in fresh mortar.
- K. Brush all excess mortar from the wall surface frequently during the work; protect existing surfaces from mortar dripping and splashing.

3.04 GENERAL REQUIREMENTS FOR POINTING WORK

- A. General: The following procedures shall be exactly the same for all exterior masonry without regard to material of construction. The specified pointing mix will be used in general pointing as indicated in these specifications and on Drawings. Use pointing mix selected by Architect following Contractor preparation of pointing mortar samples for Architect approval.
- B. Conduct of the Work: Point masonry in a manner that eliminates the necessity for heavy washing or acid cleaning after pointing is finished.
- C. Remove old mortar with hand tools where feasible. Use no electric or pneumatic chisels to clean joints. Special diamond blade power saws may be allowed by the Architect for use in cleaning horizontal joints if Contractor can demonstrate that no chipping of the brick will occur, or if this can be held to an acceptable tolerance. Vertical joints (head joints) SHALL NOT be raked out using rotary power saws.
- D. Clean joints to a minimum depth of 1 inch, or deeper if necessary to remove weathered mortar and to reach sound back up material. Head joints shall be cut back using hand chisels and hammers. Do not spall or chip brick. Replace brick chipped beyond acceptable limits. Clean mortar from the masonry surface within the joint so that new mortar bonds to brick, not to old mortar.

3.05 MASONRY INSTALLATION, GENERAL

- A. Comply with referenced unit masonry standards and other requirements indicated as applicable to each type of installation included in project.

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- B. Match coursing, bonding, color, and texture of existing masonry. Reinstalled brick shall align with existing lines. Joints between brick and stone and existing openings shall match original in dimension and appearance.
- C. Apply mortar to sides of brick and shove veneer units in place so as to eliminate voids in the mortar joints.
- D. Lay brick units true to lines as required to match original construction and align with existing brick veneer at each end.
- E. Pointing: Hold back, or rake out, setting mortar 1 inch from face of brick. Point with approved pointing mortar and tool joints as described herein and as required to match existing joints.
- F. Joints should be pointed in layers or "lifts" where the joints are deeper than 1-1/4 inch. Apply in layers not greater than 1/2 the depth until a uniform depth is formed. Compact each layer thoroughly and allow it to become thumbprint hard before applying the next layer.
- G. Follow manufacturer's recommendation regarding timing of tooling of joints. The joints shall be finished to match the original historic joint profile.
- H. Remove all excess mortar from face of brick before it dries. Do not damage brick in removal of mortar.

3.06 LIMESTONE BELT COURSE – TANNERY

- A. Install per "Masonry Installation, General" above and the following:
- B. Prepare concrete backup stem wall clean, plumb, and with proper bond surface.
 - 1. Dampproofing: Brush- or roller-applied asphalt emulsion or polymer-modified asphalt dampproofing, ASTM C836 compliant. Apply on exterior face of concrete stem wall, from grade line from footing to least 12 inches above finished grade.
- C. Lay limestone veneer in horizontal courses, using full-bed mortar.
- D. Joints: 3/8–1/2 inch typical, tooled to match historic profiles (concave or flush).
- E. Veneer shall be securely anchored to backup per code requirements.
- F. Blend stone from multiple pallets to achieve natural color and texture variation.
- G. Clean masonry with soft brushes and clean water only; no harsh chemicals.

3.07 REPOINTING MASONRY

- A. Repoint joints as follows:
 - 1. Blow loose mortar from prepared joints with compressed air working from top to bottom of wall.
 - 2. Rinse masonry joint surfaces with very low pressure water spray to remove residual dust and mortar particles. Time rinsing application so joint surfaces are damp but free of standing water at time of pointing. If rinse water dries, dampen masonry joint surfaces before pointing with very low pressure water spray. Walls should be pre-soaked with water 10 minutes prior to pointing.
 - 3. Joints should be pointed in layers or "lifts" where the joints are deeper than one and one-quarter inch (1-1/4 inch or 9mm). Apply in layers not greater than 1/2 the depth but not more than 1-1/4 inch or until a uniform depth is formed. Compact each layer thoroughly and allow it to become thumbprint hard before applying the next layer.
 - 4. After deep areas have been filled, point all joints by placing mortar in one layer up to 3/4 inch deep. Overfill the mortar past the face of the masonry units, but do not featheredge mortar or spread mortar over edges onto exposed masonry surfaces. Where existing masonry units have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joints.
 - 5. When mortar is thumbprint hard, remove excess mortar from the edge of the joint by cutting with a trowel or raking tool to match original joint profile. Remove excess mortar from edge of joint by brushing.
- B. Cure mortar by initiating alternating periods of wet and dry for at least 9 wet-and-dry cycles over a 72 hours including weekends and holidays.
 - 1. Acceptable curing methods include covering with wet burlap and plastic sheeting, periodic hand misting, and periodic mist spraying using system of pipes, mist heads, and timers.
 - 2. Adjust curing methods to ensure that pointing mortar is damp without eroding mortar surface.

3. Allow wall to thoroughly dry prior to re-misting.
 4. Keep mortar from drying out too quickly or from becoming too wet. Protect from direct sun and high winds for 72 hours after installation or from driving rain for 24 hours after installation.
 5. When using plastic sheeting, maintain air movement and air circulation.
- C. Rinse masonry joint surfaces with water to remove dust and mortar particles. Time the rinsing application so that at the time of pointing excess water has evaporated or run off and joint surfaces are damp, but free of standing water.

3.08 DUTCHMAN REPAIR

- A. General: The following procedures shall be used for the attachment of dutchman to areas where repair by installation of a dutchman is indicated or needed.
- B. Method:
1. Surface Preparation: Cut back surfaces to be repaired to a sound base using a toothed chisel. This process removes friable stone. Clean-cut surfaces to be joined. Free dust and loose material must be removed with a stiff bristle brush. Surfaces should be swabbed with water followed by denatured alcohol and acetone to ensure a clean, dry, and oil free surface.
 2. Reinforcement Pins: Determine the diameter and number of reinforcing pins needed for the repair based on weight, total surface area, and contour of the dutchman to be installed. In general any heavy, overhanging pieces should use threaded stainless steel reinforcing pins. Small vertical or horizontal pieces can usually be attached with threaded nylon or Fiberglass pins.
 3. Location of Pins/Positioning of Repair: In mechanical repair, pins should be placed in staggered rows, creating a matrix of support. Mark the desired pin locations on the prepared surface using chalk. Temporarily reposition the dutchman in order to transfer the pin location marks to the mating surface, thus aligning the repair.
 4. Drilling: Separate the dutchman and using the locating marks, drill holes in the sound stone at least 2 inch deep and not closer than 3/4 inch from the dutchman face. Holes should be flushed clean with alcohol and acetone mix. Flushing is best achieved with the same apparatus used to inject the epoxy resin. Small holes may sometimes be cleaned of dust by blowing out with a small tube. The angle, width, depth, and seating of the pins is exactly the same as in the stone-to-stone reattachment specification described above.
 5. Reattachment: A fresh piece of sandstone, as required, shall be carved to the required dimensions for insertion into previously cut back surfaces. Care must be taken in carving the dutchman. The color and rift of the dutchman should be exactly the same as that of the receiving stone. The face of the replacement stone should be tooled to match the surface of the adjacent weathered stone. Attach the dutchman using exactly the same methods described in the stone-to-stone reattachment specification described above. Choice of stone used as dutchman shall match adjacent color, texture, veiling, etc., as closely as possible.

3.09 EPOXY REPAIR

- A. Prepare Surface:
1. Vacuum and air blow all dust and residue from existing crack.
 2. Provide water injection of cracks prior to epoxy injection.
 3. Use special designed epoxy injection equipment.
 4. Apply surface ports utilizing methodologies that leave no visible residue on completion of work. Provide separation material between stone and port, if required to achieve no residue.
 5. On vertical cracks, injection is to start at lowest point.
 6. Ports are to be applied at the maximum extent possible to limit the number of ports.
 7. When pure resin flows out the next port cap, plug the current injection port and move to the next port. The injection continues in the port showing resin flow.
- B. Install anchors as follows:
1. Drill holes to diameter specified on the drawings.
 2. Clean holes using compressed, oil-free air, and bristle brushes, until no dust cloud is produced when a brush, inserted the full depth of the hole, is pulled out of the hole.
 3. Embed anchors in back-up using Jahn M80, mixed according to Manufacturer's instructions.
 4. Anchors should be covered with a minimum of 3/4" repair material.

3.10 FIELD QUALITY CONTROL

- A. Allow Architect use of scaffolding, as needed, to observe progress and quality of portion of the Work completed.
- B. Repair, patch and fill cracks, voids, defects, and damaged areas to satisfaction of the Architect; allow repair materials to cure completely.
- C. Notify Architect in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until Architect has had reasonable opportunity to make observations of work areas at lift device or scaffold location.

3.11 FINAL CLEANING

- A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter using stiff nylon or bristle brushes and clean water, which is spray applied at a low pressure (not to exceed 400 psi).
- B. Using metal scrapers or brushes is not permitted.
- C. Using acid or alkali cleaning agents is not permitted.
- D. Remove tools, stone cleaning and stabilization equipment, machinery, and surplus material from the site.
- E. Remove debris and surface dust from limited access spaces, including roofs, cornice, rooftops, and similar areas and items.
- F. Remove temporary protection and facilities installed during stabilization Work to protect previously completed installations.
- G. Comply with governing regulations and safety standards for cleaning operations. Remove waste materials from the site and dispose of in a lawful manner. Where extra materials of value remain after completion of associated stone cleaning and stabilization Work have become the Owner's property, dispose of these materials as directed by Architect.

END OF SECTION

SECTION 04 01 40.91
MASONRY RESTORATION – BRICK WALL REBUILDING

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section includes labor, materials, and equipment necessary to remove and reconstruct a full 3-wythe thick brick masonry wall on the Schoolhouse in common bond to match existing historic brickwork, and resetting porting of stone rubble foundation wall including the following:
 - 1. Stone Foundation wall:
 - a. Dismantling unstable rubble stone foundation areas.
 - b. Cleaning and salvaging original rubble stone.
 - c. Rebuilding foundation wall using salvaged stone and approved supplemental stone.
 - d. Tuckpointing and re-mortaring as required for full bearing and support.
 - 2. Brick wall:
 - a. Brick removal and salvage where reusable.
 - b. Rebuilding using salvaged and new matching brick.
 - c. Mortar matching and repointing.
 - d. Installation of headers every sixth course to match historic common bond.
 - e. Full integration with existing adjacent masonry.
- B. Related Sections:
 - 1. Section 01 35 91 – Special Procedures for Historic Treatment

1.02 REFERENCES

- A. ASATM International:
 - 1. ASTM C67 – Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile
 - 2. ASTM C270 – Standard Specification for Mortar for Unit Masonry
 - 3. ASTM C1713 – Standard Specification for Mortars for the Repair of Historic Masonry
- B. The Secretary of the Interior's Standards for the Treatment of Historic Properties
- C. National Park Service Preservation Brief 1 and 2 – Repointing and Repair of Historic Masonry.

1.03 ACTION SUBMITTALS

- A. Product Data: Submit manufacturer's data for new brick, mortar, and any reinforcement or ties.
- B. Samples:
 - 1. Three (3) brick samples of proposed new replacement units.
 - 2. Mortar sample for review and approval, color and texture to match existing.
- C. Restoration Plan: Submit method statement describing removal, storage, sorting, and reconstruction strategy.
- D. Salvaged Material Inventory: Submit inventory of salvaged stone and proposed supplemental stone.
- E. Qualification Data: Submit qualifications of masons experienced in historic stone foundation rebuilding.

1.04 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Masonry Contractor shall have minimum 5 years' documented experience in historic masonry restoration.
 - 2. Work shall be supervised by a mason experienced in traditional historic masonry construction and repair.

- B. Preconstruction Meeting: Review materials, sequence, and protection methods, and quality expectations.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect brick, stone and mortar materials from weather and contamination.
- B. Store salvaged brick in a manner that prevents damage and allows sorting by condition and size.
- C. Store mortar materials in dry conditions, covered, and off the ground.

1.06 PROJECT CONDITIONS

- A. Do not remove or rebuild masonry in freezing or excessively wet conditions.
- B. Protect adjoining surfaces during work.
- C. Maintain temporary structural support as required.

PART 2 – PRODUCTS

2.01 STONE

- A. Salvaged Rubble Stone: Reuse original field or quarried rubble stone, cleaned of mortar and debris.
- B. Supplemental Stone: Match existing in size, color, texture, and type; subject to Architect approval.

2.02 BRICK UNITS

- A. Salvaged Brick:
 - 1. Carefully remove existing brick for reuse.
 - 2. Clean and sort by condition. Reuse bricks free of damage or excessive spalling.
- B. New Brick:
 - 1. Match size, color, texture, and density of original brick.
 - 2. Provide test samples for approval.
- C. Brick Bonding:
 - 1. Reconstruct in common bond, with header course every sixth course, matching adjacent existing walls.
 - 2. Maintain vertical alignment of headers with adjacent masonry where visible.

2.03 MORTAR

- A. Mortar for Rebuilding:
 - 1. Conform to ASTM C1713.
 - 2. Lime-based mortar, custom-matched to original mortar color, texture, and compressive strength.
 - 3. No Portland cement unless specifically approved.
 - 4. Mortar Proportions: Typically 1 part lime to 2.5 parts sand by volume.
- B. Mortar for Repointing:
 - 1. Match composition and tooling of surrounding historic joints.
 - 2. Joint width and profile to match original.
- C. Pigments and Admixtures: Not permitted unless approved.

2.04 ACCESSORIES

- A. Wall Ties, Reinforcement, and Anchors: Stainless steel, as required for structural integrity and concealed installation.
- B. Dowels or pins (if required): Stainless steel, embedded per engineer's detail.
- C. Cleaning Materials: Non-acidic, approved for use on historic brick.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions and extent of stone foundation deterioration.
- B. Notify Architect of any unforeseen conditions or structural concerns.
- C. Document existing wall prior to removal through measured drawings and photographs.

3.02 REMOVAL AND SALVAGE

- A. Carefully dismantle designated masonry in reverse order of construction.
- B. Stack and store brick to avoid contamination and breakage.
- C. Dispose of unsalvageable units offsite.
- D. Carefully dismantle unstable rubble stone in designated areas, storing stone for reuse.
- E. Remove loose or deteriorated mortar and clean stone for reuse without damaging surfaces.
- F. Provide temporary shoring or bracing as needed.

3.03 REBUILDING

- A. Rebuild stone foundation plumb and level to receive full bearing of 3-wythe brick masonry wall above.
- B. Set stones in full mortar beds; no dry stacking permitted.
- C. Fill all joints fully with mortar, tooling face joints to match historic profile.
- D. Maintain coursing, bonding, and pattern consistent with original construction.
- E. Ensure solid bearing under brick wall and consolidate interior of rubble core with small stones and mortar for stability.
- F. Use supplemental stone only when salvaged stone is insufficient and as approved.
- G. Lay brick plumb, level, and true to line, maintaining common bond with headers every sixth course.
- H. Butter each unit fully and press into place to ensure full head and bed joints.
- I. Joints:
 - 1. Width to match existing.
 - 2. Tool joints to match adjacent historic work (typically concave or struck).
- J. Reuse salvaged brick on exposed faces wherever possible; use new brick for backup or inner wythes.

3.04 PROTECTION AND CURING

- A. Protect completed work from rain, direct sun, freezing, and drying winds for at least 7 days.
- B. Maintain proper moisture levels using burlap or breathable covers.

3.05 CLEANING

- A. Allow mortar to cure at least 7 days before cleaning.
- B. Clean with soft brushes and low-pressure water; no acid-based cleaners permitted.

3.06 PROTECTION

- A. Protect finished masonry from rain, frost, and direct sun during curing.
- B. Cover at end of each workday with breathable waterproof sheeting.

END OF SECTION

SECTION 04 22 00
CONCRETE UNIT MASONRY

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes providing reinforced concrete unit masonry construction (0422__) for foundation walls and including:
 - 1. Mortar and grout
 - 2. Steel reinforcing bars, ties, anchors, and other metal accessories, for anchoring unit masonry together and to other materials.
 - 3. Masonry joint reinforcement.
- B. Place, install and build-in, as work progresses, the following products and materials furnished under the indicated Sections:
 - 1. Anchor bolts, wood blocking, and anchorage items furnished or set by other trades as specified in individual Sections.

1.02 DEFINITIONS

- A. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.03 REFERENCE STANDARDS

- A. The latest versions of the publications listed below form a part of this specification; comply with provisions of these publications except as otherwise shown or specified.
 - 1. ACI 530.ASCE 5/TMS402: Building Code Requirements for Masonry Structures
 - 2. ACI 530.1/ASCE6/TMS602: Specifications for Masonry Structures
- B. Concrete Unit Masonry Construction: Comply with National Concrete Masonry Association (NCMA) "TEK Bulletins" and as specified.
 - 1. NCMA TEK Bulletin 03-01C "All-Weather Concrete Masonry Construction"
 - 2. NCMA TEK Bulletin 03-02A "Grouting Concrete Masonry Walls."

1.04 INFORMATIONAL SUBMITTALS

- A. Prepare the following submittals in accordance with Section 01 30 00 – Submittal Procedures for submittal requirements.
- B. Information and Review Submittals:
 - 1. Literature: Manufacturer's product data sheets, specifications, performance data, physical properties for each item furnished hereunder.
 - 2. Material test reports from a qualified independent laboratory employed and paid by Contractor indicating and interpreting test results relative to compliance of the following proposed masonry materials with requirements indicated:
 - a. Masonry units; report for tests performed within the previous six months.
 - b. Mortar complying with the property requirements of, and tested in accordance with ASTM C 270.
 - c. Mortar complying with the proportion requirements of ASTM C 270 and tested in accordance with ASTM C 780.
 - d. Grout mixes: Include description of type and proportions of grout ingredients.

1.05 QUALITY ASSURANCE

- A. Codes and Standards: Comply with the provisions of the following codes, specifications, and standards, except as otherwise shown or specified:

The Grant Home Sites – Boyhood Home, Schoolhouse, and Tannery
Georgetown, Ohio

1. Masonry Standard: Comply with ACI 530.1/ASCE 6/TMS 602 unless modified by requirements in the Contract Documents.
- B. Obtain masonry units from a single manufacturing source to assure uniform texture and color, for each type required, for each continuous area and visually related areas.
- C. Unit Masonry Producer Qualifications: Producer shall be a member in good standing of the National Concrete Masonry Association (NCMA).
- D. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.
- E. Consult other trades and make provisions to permit installation of their work in a manner to avoid cutting and patching. Build in work specified under other Sections, as necessary, and as work progresses.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project Site in manufacturer's original and unopened containers and packaging, bearing labels as to type and names of products and manufacturers.
- B. Protect grout, mortar, and other materials from deterioration by moisture and temperature. Store in a dry place or in waterproof containers. Keep containers tightly closed and away from open flames. Protect liquid components from freezing.
- C. Store masonry in a dry place, off the ground on prepared platforms in a manner to promote air circulation through and around units.
 1. Carefully stack all masonry units, and protect with shed or tarpaulin.
 2. Protect anchors, ties, and reinforcement from elements.
 3. Protect concrete masonry units from moisture absorption so that, at the time of installation, the moisture content is not more than the maximum allowed at the time of delivery.
- D. Handle all masonry units carefully at all times. Do not build units with chipped edges, spalls, or other damage to their appearance into the work.

1.07 PROJECT CONDITIONS

- A. Protect partially completed masonry against weather, when Work is not in progress, by covering top of walls with strong, waterproof, nonstaining membrane. Extend membrane at least 2 foot down both sides of walls and anchor securely in place.
- B. Hot and Cold Weather Precautions: Comply with BIA Technical Notes 1A and NCMA TEK 03-01C requirements and the following:
 1. Do not use frozen materials or materials mixed or coated with ice or frost.
 2. Do not build on frozen work. Remove and replace masonry work damaged by frost or freezing.
 3. Protect completed masonry work against freezing after laying.
 4. Do not use metal reinforcements or anchors coated with loose rust or other coating, including ice, which will reduce or destroy bond.
 5. Dry brush clean exposed masonry with bristle brushes at end of each day's work. Remove mortar spatters and joints ridges.
- C. Masonry Construction Tolerances: Comply with masonry construction tolerances as required by ACI 530.1
- D. Furnish and install all temporary bracing required to prevent damage or stress to masonry work by reason of wind or other loads which may be superimposed on the work. All bracing shall be rigid, secure, and solidly anchored against movement. Remove when no longer required. Be solely responsible for any damage incurred by failure to properly brace and protect against external forces.

PART 2 – PRODUCTS

2.01 MASONRY UNITS – GENERAL

- A. Manufacturer: Obtain masonry units from one manufacturer of uniform texture and color for each kind required, for each continuous area and visually related areas.
- B. Comply with referenced unit masonry standard and other requirements specified in this Section applicable to each material indicated.

2.02 CONCRETE MASONRY UNITS

- A. Concrete Masonry Units: All CMU on this project to have minimum compressive strength of 1900 psi on net cross sectional area.
- B. Concrete Masonry Units:
 - 1. Manufacturer: Shall be a member of the National Concrete Masonry Association (NCMA).
 - 2. Weight Classification: Normal weight.
 - 3. Size: Manufactured to the actual dimensions listed below (within tolerances specified in the applicable referenced ASTM specification) for the corresponding nominal sizes indicated on the drawings.
 - a. 4 inch nominal: 3-5/8 inch actual.
 - b. 6 inch nominal: 5-5/8 inch actual.
 - c. 8 inch nominal: 7-5/8 inch actual.
 - d. 12 inch nominal: 11-5/8 inch actual.
 - 4. Special Shapes: Provide, where shown and where required, lintels, corners, jambs, sash, control joints, headers, bond beams, bullnose, and other special conditions.
 - 5. Exposed Face: Manufacturer's standard color and texture, unless otherwise indicated.
 - 6. Bond beam units shall be such that where two reinforcing steel bars are required in the bond beams, bars may be located not greater than 2-5/8 inch from both faces of the unit. Bond beam units which do not allow the two bars to be separated and to be within 2 5/8" of each face will not be acceptable.
- C. Load-Bearing CMU: Provide units complying with ASTM C90, with a minimum compressive strength of as indicated in the Structural General Notes.
 - 1. Normal Weight Units: ASTM C33 concrete aggregates for a dry net weight of not less than 125 pounds per cu. ft. Strength shall be as indicated above.
 - 2. Curing: Cure units to comply with ASTM C90.
- D. Concrete Building Brick: ASTM C55 and as follows:
 - 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength per structural notes.
 - 2. Weight Classification: Normal weight.
 - 3. Size: Manufactured to the actual dimensions listed below (within tolerances specified in the applicable referenced ASTM specification) for the corresponding nominal sizes indicated on the drawings.
 - a. Modular: 3-5/8 inches thick by 2-1/4 inches high by 7-5/8 inches long.
 - b. Exposed Faces: Manufacturer's standard color and texture, unless otherwise indicated.
- E. Integral water-repellent for concrete unit masonry: Factory fabricate all exterior- exposed concrete masonry units with Integral water repellent admixture in concrete mix.
 - 1. Description: Integral liquid polymeric admixture mixed with concrete during production of concrete masonry units, which will cross link and become permanently locked into masonry unit to provide resistance to water penetration (water permeance) to achieve a Class E rating when tested to ASTM E 514-74.
 - a. Flexural Bond Strength of Masonry: No statistically lower masonry flexural bond strength shall occur as a result of adding integral water- repellent CMU and mortar admixtures when compared to a control (containing no admixtures) CMU and mortar tested according to ASTM C 1357.

- b. Compressive Strength of Masonry Prisms: No statistically lower compressive strength of prisms shall occur as a result of adding integral water-repellent CMU and mortar admixtures when compared to a control (containing no admixtures) CMU and mortar when tested according to ASTM C 1314.
 - c. Drying Shrinkage of CMU: No statistically higher drying shrinkage of the CMU shall occur as a result of adding integral water-repellent CMU admixture when compared to a control (containing no admixtures) CMU when tested according to ASTM C 426.
- 2. Fabricate blocks using water-repellent admixture at rate recommended by admixture manufacturer.

2.03 MORTAR MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction.
 - 1. Natural color.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Masonry Cement: ASTM C 91.
 - 1. Products: Subject to compliance with requirements, provide masonry cement from one of the following manufacturers:
 - a. Capital Materials Corporation; Flamingo Color Masonry Cement.
 - b. Cemex S.A.B. de C.V
 - c. Essroc, Italcementi Group
 - d. Holcim (US) Inc.
 - e. Lafarge North America Inc.;
 - f. Lehigh Cement Company;
 - f. National Cement Company, Inc.
- D. Aggregate for Mortar: ASTM C 144.
 - 1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
 - 2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
- E. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.

2.04 MORTAR MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar or grout.
 - 2. Use masonry cement mortar unless otherwise indicated.
 - 3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Mortar for Unit Masonry: Comply with ASTM C 270, Property Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
 - 1. Refer to mortar type indicated in Structural General Notes.

2.05 GROUT MIXES

- A. Prepackaged grout (ready mix) complying with ASTM C 1107, or site-mixed Portland cement grout complying with ASTM C 476 may be used.
- B. Grout for Unit Masonry: Comply with ASTM C 476 for grout used in construction of reinforced unit masonry; provide grout of consistency (fine or coarse) at time of placement which will completely fill all spaces intended to receive grout. Combine and thoroughly mix cementitious materials, aggregates and water mechanically for at least 5 minutes using the established mix design. Grout shall have a minimum compressive strength of 3,000 psi at 28 days.

1. Use fine grout in spaces less than 2 inches in least horizontal dimension; use coarse grout in spaces 2 inches or more in least horizontal dimension.
2. Measure and batch materials either by volume or weight such that the required proportions can be accurately controlled and maintained.
3. Mix grout with sufficient water to obtain a fluid pouring consistency without segregation of materials. A low or high range water reducer may be used.
4. Slump shall be between 8 and 11 inches at point of placement.
5. Grout which has hardened or stiffened due to hydration of the cement shall not be used, but in no case shall grout be used 1 hour after initial mixing water has been added to the dry ingredients.

2.06 REINFORCEMENT AND ANCHORAGE MATERIALS

A. Continuous Wire Reinforcing and Ties for Masonry; ASTM A951 and as follows:

1. Masonry-Joint Reinforcement, General: ASTM A 951/A 951M
2. Exterior and Interior Walls: Hot-dip galvanized carbon steel.
3. Wire Size for Side and Cross Rods: 0.148-inch diameter.
4. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
5. Provide welded wire units prefabricated in straight lengths of not less than 10 foot, with matching corner ("L") and intersection ("T") units.
6. Fabricate from cold-drawn steel wire complying with ASTM A1064, with deformed or embossed continuous side rods and plain cross-rods, with unit width of 1-1/2 to 2 inches less than thickness of wall or partition.
7. Configurations:
 - a. Single Wythe CMU:
 - 1) Ladder type, 1 side rod per face shell; between 5/8 inch and 1 inch mortar coverage at each face.
 - 2) Blok-Lok "BL10".
 - 3) Heckmann "1100 Series".
 - 4) H & B "#220 Ladder-Mesh"
8. Wire shall be galvanized and in accordance with the following:

a. Joint reinforcement and anchors, interior walls	ASTM A641 (0.10 oz. per sq. ft.)
b. Joint reinforcement, wire ties, or anchors in exterior walls	ASTM A153, Class B2 (1.50 oz. per sq. ft.)
c. Sheet metal ties or anchors in exterior walls or a mean relative humidity exceeding 75 percent	ASTM A153, Class B2 (1.50 oz. per sq. ft.)
9. All ladder type joint reinforcing shall have cross rods spaced at 16 inches o.c.
10. For joint reinforcing in walls, other than those described above, refer to Drawings for particular requirements.

2.07 MISCELLANEOUS

- A. General: Provide ties and anchors, specified in subsequent articles, made from materials that comply with this Article, unless otherwise indicated.
- B. Hot-Dip Galvanized Carbon-Steel Wire: ASTM A 82; with ASTM A 153, Class B-2 coating.
- C. Steel Sheet, Galvanized after Fabrication: ASTM A 1008 cold-rolled, carbon-steel sheet hot-dip galvanized after fabrication to comply with ASTM A 153.
- D. Steel Plates, Shapes, and Bars: ASTM A 36.
- E. Anchoring Devices: Provide strap anchors, ties, inserts, bolts, and rods of type and size required.
 1. Masonry to Masonry: Strap anchors 1/4-inch x 1-1/4 inches x 24 inches galvanized steel with bent ends.
 - a. Standard: Dur-O-Wal or one of the following: "301Z" Heckman "272 Rigid Steel Anchor" Hohmann & Barnard, Inc. #344 Rigid Partition Anchor, or approved equal.

2. Masonry to Steel: AA Flex-O-Lok AA400, 3/16 inch diameter triangular wire ties and AA 401 1/4 inch diameter wire weld at anchors.
 3. Finish: ASTM A153, 1.5 ounce hot-dip galvanized finish for exterior walls; standard mill finish for remaining areas.
- F. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells with loops for holding reinforcing bars in center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication.
1. Provide units with either two loops or four loops as needed for number of bars indicated.
 2. Reinforcing Bar Positioners:
 - a. Dayton Superior Corporation, Dur-O-Wal Division; D/A 810, D/A 812 or D/A 817.
 - b. Heckmann Building Products Inc.; No. 376 Rebar Positioner.
 - c. Hohmann & Barnard, Inc.; #RB or #RB-Twin Rebar Positioner.
 - d. Wire-Bond; O-Ring or Double O-Ring Rebar Positioner.

2.08 MASONRY ACCESSORY MATERIALS

- A. Preformed Control-Joint Gaskets: Styrene butadiene rubber compound conforming to ASTM D2000, Designation M2AA-805, regular design to fit standard sash block, with a durometer hardness of 80 when tested in accordance with ASTM D2240. Manufacturer: Dur-O-Wal "Rapid Control Joint"® AA Wire Products "AA1000 Titewall," or approved equal.
- B. Compressible Filler: Premolded filler strips complying with ASTM D1056, Type 2, Class A, Grade 1; closed cell neoprene; compressible up to 35 percent; of width and thickness indicated. Manufacturer: Dur-O-Wal Rapid® Soft-Joint/Expansion Joint, AA3405 Joint-Tite of AA Wire Products, Hohmann & Barnard, Inc. #NS Closed Cell Neoprene Sponge, or approved equal.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which masonry is to be installed and notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
 1. Examine surfaces which are to support masonry work to assume completion to proper lines and grades. Remove all dirt, laitance, loose aggregates, and other deleterious material.
 2. Examine rough-in and built-in construction to verify actual locations prior to installation.
- B. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to masonry installer.

3.02 PREPARATION

- A. Clean reinforcement and shanks of anchor rods by removing mud, oil, or other materials that will adversely affect or reduce bond at the time mortar or grout is placed.
- B. Prior to placing masonry, remove laitance, loose aggregate, and anything else that would prevent mortar from bonding to the foundation.

3.03 PLACING AND BONDING

- A. Thickness: Build masonry construction to the full thickness shown, except, build single-wythe walls to the actual thickness of the masonry units, using units of nominal thickness shown or specified.
- B. Lay masonry units in full bed of mortar, with full head and collar joints, uniformly jointed with other work. Use full size units without cutting whenever possible.
- C. Lay hollow masonry units with full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in first course on footings and foundation walls, and adjacent to cells or cavities to be filled with grout. Fill collar joints between wythes solid with mortar in exterior walls of multiple wythe construction.
- D. Buttering corners of joints or excessive furrowing of mortar joints are not permitted.
- E. Remove excess mortar as work progresses.

- F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, after mortar has started to harden, remove mortar and replace with fresh mortar.
- G. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- H. Leave openings for equipment which is to be installed later in construction. After installation of equipment, complete masonry work to match work adjacent to the openings.
- I. Cut neatly around pipes, conduit, and ducts. Fill cracks with mortar.
- J. Cut joints flush for masonry walls which are to be concealed or to be covered by other materials, unless otherwise shown.
- K. Rake out mortar in preparation for application of caulking or sealants where required.

3.04 COURSING

- A. Lay concrete masonry units in running bond unless otherwise noted with vertical joint in each course centered on units in courses above and below. Provide coursing as indicated on drawings.
 - 1. Form concave tooled mortar joints in all exposed work.
 - 2. Compress and cut joints flush for masonry walls which are below grade, concealed, or covered by other materials.
 - 3. Provide 3/8 inch joint widths, except for minor variations required to maintain bond alignment.
- B. Establish lines, levels, and coursing indicated. Protect from displacement.
- C. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- D. Lay-up walls plumb and true and with courses level, accurately spaced, within specified tolerances, and coordinated with other work.
- E. Bond and interlock each course of each wythe at corners. Do not use units with less than 4 inches of horizontal face dimensions at corners or jambs.
- F. Stopping and Resuming Work: Step back 1/2 masonry unit length in each course; do not tooth. Clean exposed surfaces of set masonry, and remove loose masonry units and mortar prior to laying fresh masonry.

3.05 BUILT-IN WORK

- A. As work progresses, build in metal frames, anchor bolts, bearing plates, reinforcement, inserts, sleeves and other items furnished by other sections. Form chases and openings required for other work.
- B. Provide solid masonry bearing for all lintels, beams, and load-bearing members. Provide solid masonry units or hollow units filled solid.
- C. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath in the joint below and rod grout into core.
- D. Locate pipe and conduit in walls accurately so as not to weaken the strength of the masonry.
- E. Provide anchoring devices of the type indicated and specified for anchoring masonry work. Provide open space not less than 1/2 inch width between masonry and structural member. Keep space free of mortar or other materials.

3.06 PLACING REINFORCEMENT

- A. General: Comply with requirements of ACI 530.1/ASCE 6/TMS 602. Do not use reinforcement bars with kinks or bends not shown on final shop drawings, or bars with reduced cross-section due to excessive rusting or other causes.
- B. Install reinforcing steel and concrete grout specified in Section 03 30 00. Support and secure reinforcing bars from displacement. Comply with drawing details for steel size and spacing. Support and secure reinforcing bars from displacement. Maintain position of reinforcing within 1/2 inch of dimensioned position.

- C. Position reinforcement accurately at the spacing as indicated on the drawings. The minimum clear distance between bars and masonry units shall be 1/2 inch; and between parallel bars, the minimum clear distance shall be one bar diameter. Provide bars in vertical and horizontal directions as indicated. Reinforcement shall be held in place with centering clips or caging devices. Support and secure bars against displacement; secure vertical bars near each end and at intermediate intervals not exceeding 192 bar diameters. Set horizontal reinforcement in a full bed of mortar.
- D. Splice reinforcement bars where shown; do not splice at other points unless acceptable to the Architect. Provide contact lapped splices, unless otherwise shown. In splicing vertical bars or attaching to dowels, lap ends, place in contact and wire tie. Lap ends not less than 40 bar diameters, unless otherwise indicated, or required by governing code.
- E. Secure reinforcement to insure final position after grouting in accordance with the design requirements.
- F. Bends, extensions, etc. shall comply with OBC requirements.

3.07 HORIZONTAL JOINT REINFORCEMENT

- A. Provide continuous horizontal joint reinforcement in all unit masonry walls as follows:
 - 1. Place reinforcing spaced at 16 inches on center vertically, full height of wall and every block course shown on the drawings, except at control/expansion joints.
 - 2. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 24 inches each side of opening.
 - 3. Place joint reinforcement continuous except at control joints.
 - 4. Provide continuity at corners and wall intersections by use of prefabricated "L" and "T" sections. Cut and bend units as directed by manufacturer for continuity at returns, offsets, pipe enclosures and other special conditions.
 - 5. Lap joint reinforcement ends minimum 6 inches at splices, and provide preformed corners.

3.08 CONTROL AND EXPANSION JOINTS

- A. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in- plane wall or partition movement.
- B. Form control joints in concrete masonry as follows:
 - 1. Fit bond-breaker strips into hollow contour in ends of CMUs on one side of control joint. Fill resultant core with grout and rake out joints in exposed faces for application of sealant.
- C. Control joint locations in concrete masonry, unless otherwise shown or detailed.
 - 1. Maximum spacing: Lesser of 1-1/2 times overall wall height or 25 feet and as follows:
 - a. At changes in wall height.
 - b. At changes in wall thickness, such as at pipe chases and pilasters.
 - c. At (above) movement joints in foundations and floors.
 - d. At (below) movement joints in roofs and floors that bear on a wall.
 - e. On one side of openings less than six feet wide.
 - f. On both sides of openings more than six feet wide.
 - g. Adjacent to wall corners and intersections within distance equal to half control joint spacing.

3.09 GROUTING UNIT MASONRY

- A. Grout filled or steel reinforced concrete block masonry foundations or masonry walls shall be reinforced and grouted as detailed.
- B. Grout in the block cavities, completely fill each cavity with homogenous grout, extending from the lowest course to the top of the reinforced portion of the foundation or wall. Mortar shall not be used as grout for CMU.
- C. Verify that locations of bond beams, pilasters, and other grouted components are as indicated on Drawings.
- D. Reinforce bond beams as indicated. Comply with drawing details for steel size, quantity, and spacing.

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- E. Lap splices minimum 24 bar diameters. Caging devices and centering clips shall be spaced vertically such that every section of vertical reinforcing steel bar is restrained by 2 clips or devices, one near its top and one near its bottom. Maintain position within 1/2 inch of dimensioned position.
- F. The low-lift grouting procedure shall be used as described in the Drawings and in NCMA- TEK 03-02A Grouting for Concrete Masonry Walls. Maximum height of grouting shall be 4 feet. Work grout into masonry cores and cavities to fill all voids.
- G. At bearing locations, fill all masonry cores solid with coarse grout fill to dimensions indicated on the drawings.

3.10 REPAIRING, POINTING AND CLEANING

- A. Remove and replace units which are loose, chipped, broken, stained, or otherwise damaged. Provide new masonry units to match adjoining units and install in fresh mortar pointed to eliminate evidence of replacement.
 - 1. Provide new units to match adjoining units that cannot be successfully patched and install in fresh mortar, pointed to eliminate evidence of replacement
- B. Pointing: During the tooling of joints, enlarge any voids or holes, except weep holes, and completely fill with mortar. Point-up all joints at corners, openings, and adjacent work to provide a neat, uniform appearance, properly prepared for application of caulking or sealant compounds.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 - 2. Test cleaning methods on area as indicated by Architect and allow test area to dry 3 to 7 days. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry. Record methods.
 - 3. Cover adjacent non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
 - 4. Wet wall surfaces with water prior to application of cleaners; remove cleaners promptly by rinsing thoroughly with clean water.
 - a. If chemical cleaners are to be sprayed on, the pressure shall not exceed 50 psi.

3.11 FIELD QUALITY CONTROL

- A. Inspectors: Owner will engage qualified independent inspectors to perform inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform inspections. Place grout only after inspectors have verified compliance of grout spaces and grades, sizes, and locations of reinforcement.
- B. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections indicated below and prepare test reports. Retesting of materials failing to comply with specified requirements shall be done at Contractor's expense.
- C. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof. Test types as determined by the independent testing and inspection agency.

3.12 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
- B. Excess Masonry Waste: Remove masonry waste and legally dispose of off the Site.

END OF SECTION

SECTION 06 01 40
WOODWORK RESTORATION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes restoration of existing woodwork as indicated on Drawings.
- B. Related Sections include the following:
 - 1. Section 01 43 30 – Mockups
 - 2. Section 08 14 33 – Stile and Rail Wood Doors: New wood doors.
 - 3. Section 08 52 00 – Wood Windows and Window Sash Replacement
 - 4. Section 09 01 60 – Refinishing Wood Flooring
 - 5. Section 09 91 00 – Painting: Painting systems.

1.02 DESCRIPTION OF WORK

- A. Work of the project involves restoration and repair of a historically significant feature in a historically significant building. All surfaces in the building shall be treated respectfully. The existing conditions are to be respected completely and treated with the utmost care and no material or building element shall be removed or disfigured unless specifically indicated, specified, or directed by the Architect.

1.03 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include recommendations for application and use. Include test data substantiating that products comply with requirements.
- B. Product data for each type of wood rehabilitation work required, including:
 - 1. Standard construction details and fabrication methods.
 - 2. Profiles and dimensions of individual components.
 - 3. Accessories.

1.04 INFORMATION SUBMITTALS

- A. Survey: Submit a written survey report for wood restoration work indicating in detail the condition and proposed scope of work or repair work for each location. Drawings indicate preliminary identification of the woodwork for modification or other work. The survey report is to provide enough detail to confirm assumptions and finalize scope of work. The survey report shall include woodwork identified for either modification or repair.
- B. A written narrative description of methods and sequences proposed for the disassembly and reinstallation of finish millwork.

1.05 QUALITY ASSURANCE

- A. Protection of Site and Historic Properties:
 - 1. All work shall be performed in accordance with the "Secretary of the Interior's Standards for Rehabilitation, "U.S. Department of the Interior, National Park Service, 1995." They can be found at http://www.nps.gov/hps/tps/standguide/rehab/rehab_standards.htm
- B. Work of this section shall be performed by a company which specializes in the type of repair and replication work required for this project, with a minimum of 5 years of documented successful experience, employing personnel skilled in the repair and replication processes and operations indicated, and with sufficient production capacity to produce required units without causing delay in the Work..
- C. Restoration Specialist Qualifications: Engage an experienced wood repair and cleaning firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance.

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1. Restoration Worker Qualifications: Persons who are experienced in restoration work of types they will be performing. Craftsmen shall be experienced finish carpenters familiar with and capable of work at the level of premium grade mill-work.
- D. Source Limitations: Obtain each type of material for wood repair (wood filler, cleaner, etc.) from one source with resources to provide materials of consistent quality in appearance and physical properties.
- E. Quality Standard: Unless otherwise indicated, comply with AWS's "Architectural Woodwork Standards" for historical restoration.
- F. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 – Project Coordination.

1.06 MOCK-UPS

- A. Prior to start of restoration, prepare sample mock-ups for each of the repair procedures where indicated by Architect. Obtain Architect's acceptance of visual qualities before proceeding with the Work.
- B. Prepare field mockup samples to demonstrate aesthetic effects and qualities of materials and execution. Use materials and methods proposed for completed Work and prepare samples under same weather conditions to be expected during remainder of Work.
 1. Locate mockups on the building where directed by Architect.
 2. Obtain Architect's approval of mockups before starting the remainder of patching.
 3. Maintain mockups during construction in an undisturbed condition as a standard for judging the remainder of the Work.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in manufacturer's original and unopened containers, labeled with manufacturer's name and type of products.

1.08 PROJECT CONDITIONS

- A. Proceed with restoration carpentry only after wet work, grinding and similar operations which might damage woodwork have been completed.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. New Wood:
 1. Product: Accoya® acetylated wood, manufactured by Accsys Technologies or approved equal.
 2. Species: Radiata pine or similar species as used in Accoya® proprietary treatment process.
 3. Treatment Process:
 - a. Wood shall be acetylated using a non-toxic acetylation process that permanently modifies wood cell structure to improve durability and dimensional stability.
 - b. Acetylation shall meet the requirements of EN 350, EN 113, and ASTM D1413 for resistance to biological decay.
 - c. Wood shall be treated through full thickness, not a surface treatment.
 4. Performance Requirements:
 - a. Durability: Class 1 (EN 350) – minimum 50-year service life above ground and 25 years in ground contact.
 - b. Termite Resistant: Demonstrated resistance to termites in compliance with AWPA E1 and EN 117.
 5. Moisture Content: 3 percent–7 percent at time of fabrication and installation.
 6. Finish:
 - a. Provide Accoya® in Primed or Unfinished condition.
 - b. Coatings, Wood paints or stains approved for use on Accoya®. Follow manufacturer's guidelines for compatibility.

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- 7. Dimensions and Profiles:
 - a. Match existing trim dimensions and profiles as per field verification. Custom milling to replicate historical profiles where necessary
- B. Consolidant: Epoxy Wood Filler as manufactured by Abatron, West Systems, Smith and Company, or approved equal.
 - 1. Clear Penetrating Epoxy.
 - 2. Epoxy Fairing Gel.
- C. Blocking: No. 1 Common; Douglas fir or Southern pine.

2.02 MISCELLANEOUS MATERIALS

- A. Wood Filler: Provide product acceptable to Architect which is not wax based.
- B. Cleaners: Use cleaning detergents, solvents and compounds that will remove dirt, but not dissolve, discolor, dull, deteriorate, or otherwise harm existing finishes.
- C. Primer: Alkyd-based wood primer compatible with finish coats in accordance with Section 09 91 00 – Painting.
- D. Finish Systems: As specified.

2.03 FABRICATION

- A. Match original detailing, dimensions, and profiles of components being repaired.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Survey of Existing Conditions: Record existing conditions by use of measured drawings, scaled pre-removal photographs, and templates.
 - 1. Before selective demolition or removal of existing woodwork that will be reproduced or replicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.
- B. Any concerns or issues that might affect the success of the work shall be brought to the attention of the Architect prior to start of work or if uncovered during work, as soon as discovered.

3.02 REPAIRS

- A. Make the following repairs to existing wood doors, frames, casings, panels and trim, whether or not such repairs are indicated on the drawings:
 - 1. Repair holes, gouges, indentations, nail holes and splits
 - 2. Repair cracks
 - 3. Re-attach loose sections.

3.03 REMOVAL OF FINISHES

- A. Prior to any repair work, all dirt, caulking, paint or varnish shall be carefully cut to eliminate chipping or splitting.
 - 1. Loose and deteriorated coatings shall be removed to bare wood.
 - 2. Remove extraneous nails, staples, bolts, and hooks from woodwork.
- B. All repairs and infill shall blend seamlessly with the surrounding existing historic work.
- C. Repairs:
 - 1. Clean cracks and open joints identified after surface preparation.
 - 2. Small holes, gouges, indentations, cracks, nail holes, and splits: Use wood filler.
 - 3. For holes and cracks greater than 3/4 inch in any direction, use dutchman repair.

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- a. Neatly cut out damaged, deteriorated, or rotted material and enough sound wood to bond dutchman to sound substrate.
 - b. Form prismatic void in existing wood with square corners and edges.
 - c. Fabricate Dutchman from lumber for painted finish. Cut dutchman exactly to fit void, with exposed portion matching original profile of woodwork. Insert dutchman parallel to adjoining wood grain direction.
 - d. Secure dutchman with waterproof adhesive and clamp in place until set; set flush or slightly proud of existing wood surface.
4. Replace missing sections where indicated, with new wood of profiles and dimensions to match adjoining existing sections. Conform to requirements of Section 06 40 23 – Architectural Woodwork.
5. Plane, mill, or sand to match dimensions and profile of existing adjoining sections. Match original detailing to greatest extent practicable.
- D. Replacement of mismatched or missing or severely damaged wood components:
 1. Areas for removal shall be identified by Contractor and approved by the Architect.
 2. A section of intact crisp profile, approximately 6 inches long shall be included in removal for grinding knife profile.
 3. Replacements shall be in the longest continuous lengths practicable.
 4. Running joints shall be made with a scarf and glued.
 5. Outside corners shall be mitered and glued.
 6. Any slight mismatch shall be faired so as to be invisible when finished.
 7. Depending on orientation interior corner joints shall be coped not mitered wherever possible.
- E. Finishing: After making repairs, sand to remove surface imperfections caused by repair work. Finish all surfaces of Work of this Section flush and to match adjacent original work.
 1. Preparations for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.
 - a. Scrape and clean knots, and apply coat of knot sealer before applying primer.
 - b. Apply wood filler paste to open-grain woods to produce smooth, glasslike finish.
 - c. Sand surfaces that will be exposed to view and dust off.
 - d. Priming: Prime bare wood with one coat of alkyd-based wood primer, compatible with finish coats.
 - e. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.
 2. Clean wood with cleaners to remove dirt, grime, and other foreign substances, as required to provide surface suitable for staining or painting as scheduled.
 3. Application: Apply finishes according to manufacturer's written instructions.
 - a. Use applicators and techniques suited for finish and substrate indicated.
 - b. Finish surfaces behind movable equipment and furniture same as similar exposed surfaces.
 - c. Do not apply finishes over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 4. Apply finishes to produce surface films without cloudiness, holidays, lap marks, brush marks, runs, ropiness, or other surface imperfections.

END OF SECTION

SECTION 06 10 00
ROUGH CARPENTRY

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes rough carpentry work including the following:
 - 1. Framing with dimension lumber.
 - 2. Plywood sheathing.
 - 3. Miscellaneous rough carpentry including the following:
 - a. Wood plates, and nailers, blocking, furring and grounds.
 - b. Concealed blocking for support of accessories, equipment, fixtures, specialty items, trim and facing materials.
 - c. Sill sealer gaskets at wood framing in contact with concrete or masonry.
 - 4. Wood Treatment including the following:
 - a. Preservative treatment.

1.02 DEFINITIONS

- A. Rough Carpentry: Carpentry work not specified in other Sections and not exposed, unless otherwise indicated.
- B. Lumber grading agencies, and the abbreviations used to reference them, include the following:
 - 1. APA – The Engineered Wood Association:
 - a. APA Engineered Wood Construction Guide: Form No. E30X (2019).
 - 2. AWPA – American Wood Protection Association:
 - a. AWPA M4 – “Standard for the Care of Preservative Treated Wood Products.”
 - b. AWPA U1 – Use Category System: User Specification for Treated Wood.
 - 3. NELMA: Northeastern Lumber Manufacturers Association
 - a. Standard Grading Rules for Northeastern Lumber.
 - 4. NLGA – National Lumber Grades Authority.
 - 5. RIS – Redwood Inspection Service.
 - 6. SPIB – Southern Pine Inspection Bureau.
 - a. Standard Grading Rules for Southern Pine Lumber.
 - 7. U.S. Department of Commerce, National Institute of Standards and Technology; Product Standards (PS): Softwood Lumber and Plywood Standards
 - a. DOC PS1 – “Construction and Industrial Plywood.”
 - b. DOC PS2 – “Performance Standard for Wood-based Structural Use Panels.”
 - c. DOC PS20 – “American Softwood Lumber Standard.”
 - 8. WCLIB – West Coast Lumber Inspection Bureau.
 - a. Standard Grading Rules Number 16.
 - 9. WWPA – Western Wood Products Association.
 - a. Western Lumber Grading Rules.

1.03 ACTION SUBMITTALS

- A. Refer to Section 01 33 00 – Submittal Procedures for submittal requirements.
- B. Product Data for the following products:

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1. Engineered wood products.
 2. Metal framing anchors.
- C. 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 American Lumber Standards Committee's (ALSC) Board of Review.
- D. Wood treatment data as follows, including chemical treatment manufacturer's instructions for handling, storing, installing, and finishing treated materials:
1. For each type of preservative-treated wood product, include certification by treating plant stating type of preservative solution and pressure process used, net amount of preservative retained, and compliance with applicable standards.
 2. For waterborne-treated products, include statement that moisture content of treated materials was reduced to levels indicated before shipment to Project site.

1.04 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. Lumber shall conform to U.S. Product Standard PS20, "American Lumber Standards for Softwood Lumber."
1. Lumber grades shall conform to grading rules of association under which lumber is produced and shall bear official grade and trademark of the inspection bureau of the association.
- C. Construction Panel Standards: PS 1, U.S. Product Standard for Construction and Industrial Plywood; APA PRP-108.
- D. Preservative Treatment: AWP standard U1; waterborne pressure treatment. Provide for wood in contact with soil, concrete, masonry, roofing, flashing, dampproofing and waterproofing or where indicated.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber and plywood well off the ground to ensure proper ventilation and drainage. Cover top and sides and protect from the elements, dampness, high humidity, damage and breakage. For lumber and plywood pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation.
- B. Store, handle, and protect treated lumber and plywood materials in accordance with AWP M4 "Care of Pressure-Treated Wood Products."

1.06 COORDINATION

- A. Fit rough carpentry to other work. Scribe and cope for accurate fit. Coordinate location of furring, nailers, blocking, grounds, and similar supports to allow proper attachment of other work.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Lumber, General: Shall conform to Voluntary Product Standard PS 20, "American Softwood Lumber Standard." and with applicable grading rules of inspection agencies certified by ALSC's Board of Review. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
1. Provide dressed seasoned dimensioned lumber, S4S, kiln-dried with maximum 15 percent moisture content (MC-15 or KD).
 2. Provide dry lumber with 19 percent maximum moisture content at time of dressing for 2-inch nominal thickness, unless otherwise indicated.
- B. Grade Stamps: Provide lumber with each piece factory marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.

1. For exposed lumber, furnish pieces with grade stamps applied to ends or back of each piece.
- C. Quality Mark: Treated wood members shall bear an end tag or permanent ink stamp indicating the following:
 1. Identification of treating manufacturer.
 2. Type of preservative used.
 3. Minimum preservative retention (pcf).
 4. End use for which the product is treated.
 5. AWPA standard to which the product was treated.
 6. Identity of the accredited inspection agency

2.02 DIMENSION LUMBER

- A. General: Provide dimension lumber of grade indicated according to ALSC National Grading Rule (NGR) provisions of the inspection agency indicated.
- B. Provide the following grades and species:
 1. Grade: Construction or No. 2.
 2. Species: Provide any of the following:
 - a. Species: Spruce-pine-fir south; NELMA.
 - b. Species: Southern pine; SPIB.
 - c. Species: Douglas fir-larch; WCLIB or WWPA.
 - d. Species: Hem-fir; WCLIB or WWPA.
 3. Fabricate miscellaneous lumber from dimension lumber of sizes indicated and into shaped shown.
 4. Moisture Content: 19 percent maximum for lumber items not specified to receive wood preservative treatment.
- C. Joists: Any species of machine stress-rated dimension lumber with a grade of not less than 1200f-1.6E.

2.03 MISCELLANEOUS LUMBER

- A. General: Provide lumber of grade indicated according to ALSC National Grading Rule (NGR) provisions, for support or attachment of the construction, including the following:
 1. Blocking
 2. Rooftop equipment curbs and support bases
 3. Cant strips, bucks, nailers
 4. Furring, grounds, stripping, and similar members.
- B. For items of dimension lumber size, provide Construction, Stud, or No. 2 grade lumber with 19 percent maximum moisture content and any of the following species:
 1. Mixed southern pine; SPIB.
 2. Hem-fir or Hem-fir (north); NLGA, WCLIB, or WWPA.
 3. Spruce-pine-fir (south) or Spruce-pine-fir; NELMA, NLGA, WCLIB, or WWPA.
 4. Spruce-pine-fir (south) or spruce-pine-fir, Construction or No. 2 Common grade; NeLMA, NLGA, WCLIB, or WWPA.
 5. Eastern softwoods, NELMA.
 6. Northern species, NLGA.
 7. Western woods, WCLIB or WWPA
- C. Moisture Content: 19 percent maximum for lumber items not specified to receive wood preservative treatment.

2.04 CONCEALED, PERFORMANCE-RATED STRUCTURAL-USE PANELS

- A. Where structural-use panels are indicated for the following concealed types of applications, provide APA-performance rated panels complying with requirements designated under each application for grade, span rating, exposure durability classification, and edge detail.
 1. Thickness Provide panels meeting requirements specified but not less than the thickness indicated.
 2. Span Ratings: Provide panels with span ratings required to meet "Code Plus" provisions of APA Engineered Wood Construction Guide: Form No. E30x.

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- B. Construction Panels:
 - 1. Plywood: DOC PS 1, unless otherwise indicated.
 - 2. Thickness: As needed to comply with requirements specified but not less than thickness indicated.
 - 3. Factory mark panels according to indicated standard.
- C. Wall Sheathing: APA-rated sheathing. APA rated Structural I sheathing.
 - 1. Exposure Durability Classification: Exterior.
 - 2. Span Rating: As required to suit stud spacing indicated.
- D. Roof Sheathing: APA-rated sheathing. APA rated Structural I sheathing.
 - 1. Exposure Durability Classification: Exterior.
 - 2. Span Rating: As required to suit rafter spacing indicated.

2.05 WOOD-PRESERVATIVE TREATED MATERIALS

- A. General: Where lumber or plywood is indicated as preservative treated or is specified to be treated, comply with applicable requirements of AWP Standard U1 Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground. Mark each treated item with the Quality Mark Requirements of and inspection agency approved by ALSC's Board of Review.
 - 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. Treat indicated items and the following:
 - 1. Wood cants, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry and concrete.
 - 2. Wood framing members less than 18 inches above grade.
 - 3. Wood floor plates installed over concrete slabs directly in contact with earth.
- E. Sill plates shall be treated in accordance with AWP Standard U1 to the requirements of Use Category 2 (UC2).

2.06 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacturer.
 - 1. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with a hot-dip zinc-coating in accordance with ASTM A153 or of Type 304 stainless steel.
 - 2. Nails, Brads, and Staples: ASTM F 1667.
 - 3. Power-Driven Fasteners: NES NER-272.
 - 4. Wood Screws: ASME B18.6.1.
 - 5. Lag Bolts: ASME B18.2.1.
 - 6. Bolts: Steel bolts complying with ASTM A307, Grade A; with ASTM A563 hex nuts and, where indicated, flat washers.
 - 7. Screws for Fastening to Metal Framing: ASTM C 1002 , length as recommended by screw manufacturer for material being fastened.

2.07 METAL FRAMING ANCHORS

- A. Provide galvanized steel framing anchors of structural capacity, type, and size indicated and as follows:
 - 1. Research or Evaluation Reports: Provide products for which model code research or evaluation reports exist that are acceptable to authorities having jurisdiction and that evidence compliance of metal roofing anchors for application indicated with building code in effect for Project.
 - 2. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be

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determined from empirical data or by rational engineering analysis, and demonstrated by comprehensive testing performed by a qualified independent testing agency.

- B. Galvanized steel sheet: hot-dip, zinc-coated steel sheet complying with ASTM A653, G60 coating designation, structural, commercial, or lock-forming quality, as standard with manufacturer for type of anchor indicated.
- C. Joist Hangers: U-shaped joist hangers with 2 inch long seat and 1-1/4 inch wide nailing flanges at least 85 percent of joist depth.
 - 1. Thickness: 0.064 inch.
- D. Rafter Tie-Downs (Hurricane or Seismic Ties): Bent strap tie for fastening rafters or roof trusses to wall studs below, 2-1/4 inches wide by 0.062 inch thick. Tie fits over top of rafter or truss and fastens to both sides of rafter or truss, face of top plates, and side of stud below.

2.08 MISCELLANEOUS MATERIALS

- A. Sill Sealer Gaskets:
 - 1. Manufacturers:
 - a. Owens Corning, or approved equal.
 - 2. Material: Closed-cell polyethylene foam sill sealer strip.
 - 3. Thickness: 3/16 inch (4.8 mm) minimum.
 - 4. Width: Sized to match sill plate width.
 - 5. Properties:
 - a. Compressible to seal irregularities between sill plate and concrete/masonry.
 - b. Resistant to moisture and rot.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify that concrete or masonry bearing surfaces are clean, level, and free of debris prior to installing sill plates and sill sealer gaskets.

3.02 INSTALLATION

- A. Sill Sealer Gaskets:
 - 1. Install sill sealer gasket continuously between wood sill plates and concrete or masonry foundation walls or slabs.
 - 2. Ensure full contact of gasket with foundation surface and sill plate without gaps.
 - 3. Do not stretch or tear gasket during installation. Overlap joints by minimum 6 inches if splicing is required.
 - 4. Remove any excess gasket material extending beyond edge of sill plate.
- B. Framing Standard: Comply with AF&PA's "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit.
- D. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. "Table 2304.10.1 – "Fastening Schedule" of the Ohio Building Code.
- E. Use common wire nails, unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; do not countersink nail heads, unless otherwise indicated. Install fasteners without splitting wood; predrill as required.
- F. Use hot-dip galvanized or stainless steel nails where rough carpentry is exposed to weather, on ground contact, or in area of high relative humidity.

- G. Apply field treatment complying with AWPA M4 to cut surfaces of preservative treated lumber and plywood.

3.03 WOOD FRAMING, GENERAL

- A. Carefully lay out, fit, and fabricate all items of rough carpentry. Use only treated, sound thoroughly seasoned materials of longest practical lengths and sizes to minimize joints. Use materials free of warp, unless warp can be easily corrected by anchorage and attachment. Brace, plumb, and level all members, and secure with sufficient nails, spikes, bolts, or other suitable fastenings to assure rigidity and permanent attachment. Discard units of material with defects that impair quality of rough carpentry and that are too small to use with minimum number of joists or optimum joint arrangement.
- B. Metal Framing Anchors: Install metal framing to comply with manufacturer's written instructions.
- C. Do not splice structural members between supports, unless otherwise indicated.
- D. Install framing members of size and spacing indicated.
- E. 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 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 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 thickness.

3.04 WALL AND PARTITION FRAMING

- A. General: Arrange studs so that wide face of stud is perpendicular to direction of wall or partition and narrow face is parallel. Provide single bottom plate and double top plates using members of 2-inch nominal thickness whose widths equal that of studs; except single top plate may be used for non-load bearing partitions. Nail or anchor plates to supporting construction, unless otherwise indicated.
 - 1. For exterior walls, provide 2 by 4 inch nominal size wood studs spaces 16 inches o.c., except where otherwise indicated or required.
 - 2. For interior partitions and walls, provide 2 by 4 inch nominal size wood studs spaces 16 inches o.c., except where otherwise indicated or required.
- B. Construct corners and intersections with 3 or more studs. Provide miscellaneous blocking and framing as shown and required to support facing materials, fixtures, specialty items, and trim.
 - 1. Provide continuous horizontal blocking at mid-height of single-story partitions over 96 inches high and multi-story partitions, using members of 2 inch nominal thickness and of same width as wall or partitions.
- C. Frame openings with multiple studs and headers. Provide nailed header members of thickness equal to width of studs. Set headers on edge and support on jamb studs.
 - 1. For non-loadbearing partitions, provide double jamb studs with headers not less than 4 inch nominal depth for openings 36 inches and less in width, and not less than 6 inch nominal depth for wider openings.
 - 2. For loadbearing walls, provide double jamb studs for openings 72 inches and less in width, and triple jamb studs for wider openings. Provide headers of depth shown or, if not shown, as recommended by AFPA's "Manual for Wood Framed Construction."
- D. Provide bracing in exterior walls, at both walls of each external corner, full story height, unless otherwise indicated. Provide one of the following:
 - 1. Diagonal bracing at 45-degree angle using metal bracing.
 - 2. Performance rated structural-use panels, not less than 48 by 96 inches applied vertically.

3.05 RAFTER AND CEILING JOIST FRAMING

- A. Ceiling Joists: Install ceiling joists with crown edge up and complying with requirements specified above for floor joists. Face nail to ends of parallel rafters.

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- B. Rafters: Notch to fit exterior wall plates and toe nail or use metal framing anchors. Double rafters to form headers and trimmers at openings in roof framing if any, and support with metal hangers. Where rafters abut at ridge, place directly opposite each other and nail to ridge member or use metal ridge hangers.
 - 1. At valleys, provide double-valley rafters of size shown or, if not shown, of the same thickness as regular rafters and 2 inches deeper. Bevel ends of jack rafters for full bearing against hip rafter.
 - 2. At hips, provide hip rafter of size shown or, if not shown, of the same thickness as regular rafters and 2 inches deeper. Bevel ends of jack rafters for full bearing against hip rafter.
- C. Provide special framing as shown for eaves, overhangs, dormers, and similar conditions, if any.

3.06 CONCEALED BLOCKING

- A. Provide blocking concealed in partitions at every location where a fixture or other appurtenance is supported by the partition. Blocking shall be installed horizontally from stud to stud and be positively connected to each stud in a manner so that it supports each fixture or appurtenance.

3.07 INSTALLATION OF STRUCTURAL-USE PANELS

- A. Comply with applicable recommendations contained in APA Form No. E30, "APA Design/Construction Guide: Residential & Commercial," for types of structural-use panels and applications indicated.
- B. Fastening Methods: Fasten panels as indicated below:
 - 1. Sheathing: Nail to framing.
 - a. Space panels 1/8 inch at edges and ends.
 - b. Provide roof sheathing ply-clips at unsupported joints of panels between roof framing members.

END OF SECTION

SECTION 06 20 13
EXTERIOR FINISH CARPENTRY

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section includes the following:
 - 1. Exterior wood trim and carpentry.
- B. Related Sections:
 - 1. Section 06 10 00 – Rough Carpentry for wood blocking.
 - 2. Section 07 46 46 – Fiber Cement Siding
 - 3. Section 09 91 00 – Painting for priming and backpriming of finish carpentry.

1.02 DEFINITIONS

- A. Inspection agencies, and the abbreviations used to reference them, include the following:
 - 1. NELMA – Northeastern Lumber Manufacturers Association.
 - 2. NLGA – National Lumber Grades Authority.
 - 3. SPIB – Southern Pine Inspection Bureau.
 - 4. WCLIB – West Coast Lumber Inspection Bureau.
 - 5. WWPA – Western Wood Products Association.

1.03 ACTION SUBMITTALS

- A. Prepare the following submittals in accordance with Section 01 33 00 – Submittal Procedures.
- B. Product Data: For each type of process and factory-fabricated product. Include construction details, material descriptions, dimensions of individual components and profiles, textures, and colors.
 - 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, net amount of preservative retained, and chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.
 - 2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

1.04 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. Preservative Treatment: Nonpressure method, exterior type, NWWDA I.S. 4.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect materials against weather and contact with damp or wet surfaces. Stack lumber, plywood, and other panels. Provide for air circulation within and around stacks and under temporary coverings.
- B. Wood to be painted shall be sealed upon delivery to the site; refer to Section 09 91 00 – Painting.

1.06 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit work to be performed and at least one coat of specified finish can be applied without exposure to rain, snow, or dampness.
 - 1. For exterior ornamental wood columns, comply with manufacturer's written instructions and warranty requirements.

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- B. Examination of Substrate and Conditions: The Installer must examine the substrate and the conditions under which the Work under this Section is to be performed and notify the Contractor in writing of any unsatisfactory conditions. Do not proceed with Work under this Section until unsatisfactory conditions have been corrected.
- C. Do not install woodwork until the required temperature and relative humidity have been stabilized in installation areas.
- D. Field Measurements: Where woodwork is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before manufacturing woodwork; show recorded measurements on final shop drawings. Coordinate manufacturing schedule with construction progress to avoid delay of work.

PART 2 – PRODUCTS

2.01 MATERIALS, GENERAL

- A. Lumber: DOC PS 20 and applicable grading rules of inspection agencies certified by the American Lumber Standards' Committee Board of Review.
 - 1. Factory mark each piece of lumber with grade stamp of inspection agency indicating grade, species, moisture content at time of surfacing, and mill.
 - 2. For exposed lumber, mark grade stamp on end or back of each piece, or omit grade stamp and provide certificates of grade compliance issued by inspection agency.
- B. Softwood Plywood: DOC PS 1.

2.02 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. Preservative Treatment by Pressure Process:
 - 1. Lumber: AWPAC2 except that lumber that is not in contact with the ground and is continuously protected from liquid water may be treated according to AWPAC31 with inorganic boron (SBX). Kiln dry after treatment to a maximum moisture content of 19 percent.
 - 2. Plywood: AWPAC9. Kiln dry after treatment to a maximum moisture content of 18 percent.
 - 3. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
 - 4. Do not use material that is warped or does not comply with requirements for untreated material.
 - 5. Mark lumber with treatment quality mark of an inspection agency approved by ALSC's Board of Review.
 - 6. Application: Where indicated.

2.03 EXTERIOR STANDING AND RUNNING TRIM

- A. New Wood:
 - 1. Product: Accoya® acetylated wood, manufactured by Accsys Technologies or approved equal.
 - 2. Species: Radiata pine or similar species as used in Accoya® proprietary treatment process.
 - 3. Treatment Process:
 - a. Wood shall be acetylated using a non-toxic acetylation process that permanently modifies wood cell structure to improve durability and dimensional stability.
 - b. Acetylation shall meet the requirements of EN 350, EN 113, and ASTM D1413 for resistance to biological decay.
 - c. Wood shall be treated through full thickness, not a surface treatment.
 - 4. Performance Requirements:
 - a. Durability: Class 1 (EN 350) – minimum 50-year service life above ground and 25 years in ground contact.
 - b. Termite Resistant: Demonstrated resistance to termites in compliance with AWPAC E1 and EN 117.
 - 5. Moisture Content: 3 percent–7 percent at time of fabrication and installation.
 - 6. Finish:
 - a. Provide Accoya® in Primed or Unfinished condition.

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- b. Coatings, Wood paints or stains approved for use on Accoya®. Follow manufacturer's guidelines for compatibility.
- 7. Dimensions and Profiles:
 - a. Match existing trim dimensions and profiles as per field verification. Custom milling to replicate historical profiles where necessary
- B. Lumber Trim and Moldings for Opaque Painted Applications:
 - 1. Maximum Moisture Content: 15 percent.
 - 2. Finger Jointing: Not allowed.
 - 3. Face Surface: Surfaced (smooth).

2.04 MISCELLANEOUS MATERIALS

- A. Fasteners for Exterior Finish Carpentry: Provide nails or screws of the following materials, in sufficient length to penetrate minimum of 1-1/2 inches into substrate, unless otherwise recommended by manufacturer:
 - 1. Stainless steel.
- B. Flashing: Comply with requirements in Section 07 62 00 – Sheet Metal Flashing for flashing materials installed in finish carpentry.

2.05 FABRICATION

- A. Wood Moisture Content: Comply with requirements of specified inspection agencies and with manufacturer's written recommendations for moisture content of finish carpentry at relative humidity conditions existing during time of fabrication and in installation areas.
- B. Back out or kerf backs of the following members, except members with ends exposed in finished work:
 - 1. Exterior standing and running trim wider than 5 inches.
- C. Ease edges of lumber less than 1 inch in nominal thickness to 1/16-inch radius and edges of lumber 1 inch or more in nominal thickness to 1/8-inch radius.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.
- B. Before installing finish carpentry, condition materials to average prevailing humidity in installation areas for a minimum of 24 hours.
- C. Prime lumber for exterior applications to be painted, including both faces and edges. Cut to required lengths and prime ends. Comply with requirements in Section 09 91 00 – Painting.

3.03 INSTALLATION

- A. Provide work to sizes, shapes, and profiles indicated. Install work to comply with quality standards referenced. Conceal fasteners to the greatest extent practical. Back prime work and install plumb, level and straight with tight joints; scribe work to fit.
- B. Install finish carpentry level, plumb, true, and aligned with adjacent materials. Use concealed shims where necessary for alignment.
 - 1. Scribe and cut finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.
 - 2. Countersink fasteners, fill surface flush, and sand where face fastening is unavoidable.

3. Install to tolerance of 1/8 inch in 96 inches for level and plumb. Install adjoining finish carpentry with 1/32-inch maximum offset for flush installation and 1/16-inch maximum offset for reveal installation.
 4. Coordinate exterior finish carpentry with materials and systems in or adjacent to it. Provide cutouts for mechanical and electrical items that penetrate exterior finish carpentry.
- C. Comply with manufacturer's requirements for cutting, handling, fastening and working treated materials.

3.04 STANDING AND RUINING TRIM INSTALLATION

- A. Install flat grain lumber with bark side exposed to weather.
- B. Install trim to comply with manufacturer's written instructions.
- C. Install trim with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 24 inches long except where necessary.
1. Use scarf joints for end-to-end joints.
 2. Stagger end joints in adjacent and related members.
- D. Fit exterior joints to exclude water. Cope at returns and miter at corners to produce tight-fitting joints with full-surface contact throughout length of joint. Plane backs of casings to provide uniform thickness across joints, where necessary for alignment.
- E. Unless otherwise indicated, countersink fasteners, fill surface flush, and sand where face fastening is unavoidable.

3.05 ADJUSTING

- A. Replace finish carpentry that is damaged or does not comply with requirements. Finish carpentry may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing. Adjust joinery for uniform appearance.

3.06 PROTECTION

- A. Protect installed products from damage from weather and other causes during construction.
- B. Remove and replace finish carpentry materials that are wet, moisture damaged, and mold damaged.
1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.

END OF SECTION

SECTION 06 40 23
INTERIOR ARCHITECTURAL WOODWORK

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes: Shop-finished interior architectural woodwork and supplementary items necessary for installation.
- B. Items included are:
 - 1. Plastic laminate faced open shelving casework
 - 2. Plastic laminate countertops
 - 3. Standing and running wood trim
 - 4. Slatwall
 - 5. Hardware and accessories
- C. Related Sections include the following:
 - 1. Section 06 10 00 – Rough Carpentry for wood furring, blocking, shims, and hanging strips required for installing woodwork and concealed within other construction before woodwork installation.
 - 2. Section 09 91 00 – Painting

1.02 REFERENCES

- A. ANSI/AWI 0641-2019 — Architectural Woodwork Standards, Section 10: Plastic Laminate Clad Casework.
 - 1. 06 4116 Plastic-Laminate-Clad Architectural Cabinets

1.03 DEFINITIONS

- A. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items unless concealed within other construction before woodwork installation.
- B. Exposed Surfaces, Semi-Exposed Surfaces, Concealed Surfaces, Types of Cabinet Construction, and other related terms are defined in referenced quality standards.

1.04 ACTION SUBMITTALS

- A. Prepare the following submittals in accordance with Section 01 33 00 – Submittal Procedures.
- B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
 - 1. Show details full size.
 - 2. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
 - 3. Show locations and sizes of cutouts and holes for items installed in architectural woodwork.
 - 4. Review grommet locations with Owner and Architect prior to installation. Coordinate location with power/data jacks below the countertop.
- C. Samples for Initial Selection: For each type of product for which a color has not yet been specified, provide manufacturer's color charts consisting of units or sections of units showing the full range of colors available.
- D. Samples for Verification:
 - 1. Items with Opaque Finish:
 - a. Lumber and panel products with shop-applied opaque finish, 50 sq. in. (300 sq. cm) for lumber and 8 in by 10 in (200 mm by 250 mm) for panels, for each finish system and color, with 1/2 of exposed surface finished.
 - 2. Items with Plastic Laminate Finish:

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- a. Plastic laminates, 8 in by 10 in (200 mm by 250 mm), for each type, color, pattern, and surface finish, with 1 sample applied to core material and specified edge material applied to 1 edge.
- 3. Cabinets:
 - a. Corner Piece: Cabinet-front frame joints between stiles and rails, as well as exposed end pieces, 18 in (450 mm) high by 18 in (450 mm) wide by 6 in (150 mm) deep.
 - b. Countertops: Section of countertop showing top, front edge, and backsplash construction.
- 4. Standing and Running Trim: Corner piece showing miter joints.
- E. Product Certificates: For each type of product, signed by manufacturers certifying that products furnished comply with requirements.
- F. Qualification Data:
 - 1. For firms and persons specified in "Quality Assurance" to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Architects and Owners, and other information specified.

1.05 QUALITY ASSURANCE

- A. Manufacturer/Fabricator Qualifications: Manufacturer/fabricator with not less than 5 years' experience with successful production of products and systems similar to scope of this Project, with a record of successful in-service performance and completion of projects for a period of not less than 5 years, and with sufficient production capability, facilities, and personnel to produce required Work, and with fabrication and installation of architectural casework meeting referenced AWI Quality Standards.
- B. Installer Qualifications:
 - 1. Experience: Installer with minimum of 5 years specialized experience in performing specified work similar in design, material and extent to scope of Project, and with a record of successful in-service performance.
 - 2. Supervision: Installer shall maintain a competent supervisor who is on job site during times specified work is in progress, and, who is experienced in installing systems similar to type and scope required for Project.
- C. Quality Standard: Unless otherwise indicated, comply with one of the following for standards of interior architectural woodwork indicated and other requirements:
 - 1. AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.
 - a. Provide manufacturer certification indicating that woodwork complies with requirements of referenced quality standards.
 - 2. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with such selections and requirements in addition to the quality standard.

1.06 DELIVERY, STORAGE, AND HANDLING

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

1.07 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
 - 1. Prior to delivery and installation of architectural woodwork, casework and related woodwork, to the job site, the building environment shall be stabilized to provide condition that will maintain a relative humidity of not less than 25%, nor more than 55%.

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

1.08 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.
- B. Mechanical/Electrical Coordination: Coordinate location and concealment and indicate on shop drawings.

PART 2 – PRODUCTS

2.01 MANUFACTURERS AND PRODUCTS

- A. Available Manufacturers/Fabricators and Products: Subject to compliance with requirements of Contract Documents as judged by the Architect, manufacturers/fabricators offering products that may be incorporated into the Work include, but are not limited to, those listed.
- B. Basis of Design (Product Standard): Contract Documents are based on products and systems specified to establish a standard of quality. Other manufacturers offering products having equivalent characteristics may be considered, provided deviations are minor and comply with requirements of Contract Documents as judged by the Architect.

2.02 MATERIALS

- A. Woodwork Standards: Fabricate all components to comply with ANSI/AWI 0641–2019, Grade: Custom.
- B. General: Provide materials that comply with requirements of AWI's quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.
- C. Hardwood Finish Lumber for Opaque Finish (Painted): Grade I in accordance with AWI 100-S-1; kiln dried, maximum permissible moisture content in accordance with AWI 100-S-3.
 - 1. Exposed; opaque finish: Grade I Poplar or Birch.
- D. Core Materials for Casework:
 - 1. Hardwood plywood, meeting HPVA HP-1 standard for veneer core, multi-ply construction.
 - 2. Minimum thickness: 1" (25 mm) for wall-mounted shelving unless otherwise indicated.
 - 3. Plywood to be balanced and of quality suitable for laminated fabrication without telegraphing or voids..
- E. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or, if not indicated, as required by woodwork quality standard.
 - 1. Basis of Design Manufacturer: As selected
 - 2. Colors, Patterns, and Finishes:
 - a. Selections: As indicated in Finish Schedule.

2.03 INTERIOR STANDING AND RUNNING TRIM

- A. Grade for Opaque Finish: Custom.
- B. Provide split species on trim that faces areas with different wood species, matching each face of woodwork to species and cut of finish wood surfaces in areas finished.

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- C. For trim items wider than available lumber, use veneered construction. Do not glue for width.
- D. Backout or groove backs of flat trim members and kerf backs of other wide, flat members, except for members with ends exposed in finished work.
- E. Assemble casings in plant except where limitations of access to place of installation require field assembly.

2.04 PLASTIC-LAMINATE CASEWORK

- A. Grade: Custom.
- B. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
 - 1. Horizontal Surfaces Other Than Tops: Grade HGP, .038 in (1 mm) thick.
 - 2. Edges: PVC Edge Banding, 0.12 in (3 mm) thick, matching laminate in color, pattern, and finish.
- C. Semi-exposed Surfaces: Provide surface materials indicated below:
 - 1. Surfaces Other Than Drawer Bodies: High-pressure decorative laminate, Grade CLS, .020 in (0.5 mm) thick.
 - 2. Edges: PVC Edge Banding, .038 in (1 mm) thick, matching laminate in color, pattern, and finish.
- D. Body Members (Ends, Divisions, Bottoms and Sub-Tops): Plywood, 3/4 in (19 mm) minimum thickness.
- E. Face Frames and Rails: Solid-hardwood lumber or hardwood plywood, 3/4 in (19 mm) thick minimum thickness.
- F. Kicks and Bases: Solid-hardwood lumber, 1 1/2 (38 mm) thick minimum thickness.
- G. Shelves: Hardwood plywood with veneer core with the following thickness:
 - 1. For Spans Up To 42 in (1050 mm): 1 in (25 mm).
- H. Shelf Pins:
 - 1. Nickel-plated steel or heavy-duty plastic shelf pins, 5 mm or 1/4" diameter, sized to fit pre-drilled holes in shelf sides.
 - 2. Rated to support minimum 50 lbs (22.7 kg) per shelf.
 - 3. Hole Pattern:
 - a. Vertical rows of holes at 32 mm (1-1/4") spacing (or as per AWI AWS Section 10), beginning no higher than 2" from bottom and no lower than 2" from top.
 - b. Holes aligned to ensure level and stable shelf support.

2.05 SLATWALL

- A. Slatwall: High pressure laminate on high density 3/4-inch medium density fiberboard core panels. Groove spacing at 5-1/2-inch on center to fit standard Slatwall accessories.
- B. Groove Inserts: Extra strength mill aluminum extrusions with powder coat finish to match laminate color.
- C. Joinery: All parts shall be accurately machined and fit for square and true.
- D. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces as selected by the Architect from manufacturer's standard product.

2.06 MISCELLANEOUS MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Fire-retardant-treated softwood lumber, kiln dried to less than 15 percent moisture content.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.
- C. Fasteners:

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1. Screws: Select material, type, size, and finish required for each use. Comply with ASME B18.6.1 for applicable requirements. For metal framing supports, provide screws as recommended by metal-framing manufacturer.
 2. Nails: FS FF-N-105, type, size, material and finish as required for the condition of use.
- D. Adhesives:
1. General: As recommended by woodwork fabricator to suit application.
 2. VOC Limits for Installation Adhesives and Glues: Use installation adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24) unless indicated otherwise:
 - a. Wood Glues: 30 g/L.
 - b. Contact Adhesive: 250 g/L.
 3. Adhesive for Bonding Plastic Laminate Faces and Edges: PVA as recommended by woodwork fabricator to suit application.
- E. Hanging Clips: Provide manufacturer's standard nonferrous-metal or hot-dip galvanized zee hanging clips.

2.07 FABRICATION, GENERAL

- A. General: Shop-assemble components to greatest extent possible. Fabricate shelving rigid, square, and free of defects detrimental to appearance or performance.
- B. Construction:
1. Casework Construction Type: AWI 0641 Section 10.4 – Plastic Laminate Clad, Open Adjustable Shelving.
 2. Grade: Custom.
 3. Exposed Surfaces: Clad in specified HPL.
 4. Semi-Exposed Surfaces: Cabinet liner or melamine.
 5. Concealed Surfaces: Minimum cabinet liner or sealed as permitted by AWI Custom Grade.
- C. Shelving:
1. Shelves designed to meet AWI span and deflection limits.
 2. Provide balanced construction to minimize warping.
- D. Tolerances: Fabrication and installation tolerances per AWI 0641 Custom Grade.
- E. Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
1. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on Shop Drawings before disassembling for shipment.
- F. Shop-cut openings to maximum extent possible to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
1. Countertops: Seal edges of openings in countertops.

2.08 SHOP FINISHING

- A. Grade: Provide finishes of same grades as items to be finished.
- B. General: Finish architectural woodwork at fabrication shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.
- C. Shop Priming: Shop apply the prime coat including backpriming, if any, for items specified to be field finished. Refer to Division 09 Painting Sections for material and application requirements.

- D. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.
 - 1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to end-grain surfaces. Concealed surfaces of plastic-laminate-clad woodwork do not require backpriming when surfaced with plastic laminate.
- E. Finish:
 - 1. Selections: As indicated in Finish Schedule.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Acceptance of Surfaces and Conditions: Examine substrates to receive interior architectural woodwork and associated work to which interior architectural woodwork will be applied for compliance with requirements and other conditions affecting performance. Proceed only when unsatisfactory conditions have been corrected in a manner complying with Contract Documents. Starting work within a particular area will be construed as acceptance of surface conditions.

3.02 PREPARATION

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

3.03 CASEWORK INSTALLATION

- A. Installation Quality Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 for fabrication of type of woodwork involved.
- B. Assemble woodwork and complete fabrication at Project site to comply with requirements for fabrication in Part 2, to extent that it was not completed in the shop.
- C. Install casework level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches.
- D. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts. Scribe casework to adjacent surfaces as follows:
 - 1. Countertops to wall surfaces.
 - 2. Cabinet end walls and other exposed surfaces to walls.
 - 3. Cabinet bases to floors.
- E. Anchor casework to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation.
- F. Provide required fastenings, clip angles, braces, anchors, adjustable levelers, and other fittings to render the work rigid and secure.
- G. Cabinets: Install without distortion so surfaces are accurately aligned. Complete installation of hardware and accessory items as indicated.
 - 1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
- H. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
 - 1. Install countertops with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
 - 2. Seal space between backsplash and wall with sealant specified in Section 07 92 00 – Joint Sealants. Where there is no backsplash or where backsplash is of a different material from countertop, seal space between countertop and adjoining material.

- I. Touch up finishing work specified in this Section after installation of woodwork. Fill nail holes with matching filler where exposed.

3.04 STANDING AND RUNNING TRIM INSTALLATION

- A. Jointing: Make all joints to conceal shrinkage; miter all exterior corners; cope all interior corners, miter or scarf all end-to-end joints; install all trim pieces as long as possible, jointing only where solid support is obtained. Make no joints closer than 4 feet to corners.
- B. Lengths of Material: Use random lengths and show typical joint locations on shop drawings. The minimum length shall be 8 feet, except where short lengths are required by installation conditions.
- C. Fastening:
 - 1. Install all items straight, true, level, plumb, and firmly anchored in place; where blocking or backing is required, coordinate as necessary with other trades to ensure placement of all required backing and blocking in a timely manner.
 - 2. Fasten trim with finish nails or screws of proper dimension to hold the member firmly in place without splitting the wood.
 - 3. On exposed finish work, set all nails and screws.
 - 4. Align exposed fasteners for uniform pattern; random or "shotgun" patterns will not be accepted.

3.05 ADJUSTING AND CLEANING

- A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Complete the finishing work specified in this Section to extent not completed at shop or before installation of woodwork.
- C. Touch up finishing work specified in this Section after installation of woodwork. Fill nail holes with matching filler where exposed.
- D. Clean woodwork on exposed and semi-exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.
- E. Protect casework for remainder of work until completion.

END OF SECTION

SECTION 07 21 00
THERMAL INSULATION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section include: Building thermal insulation and accessories, including but not limited to the following:
 - 1. Thermal batt insulation between wall framing at exterior walls
 - 2. Rigid insulation at perimeter foundation walls

1.02 ACTION SUBMITTALS

- A. Prepare submittals in accordance with Section 01 33 00 – Submittal Procedures.
 - 1. Product Data: Manufacturer's product data sheets, specifications, performance data, physical properties for each item furnished hereunder.

1.03 QUALITY ASSURANCE

- A. Single Source Responsibility: Furnish each insulation type from one manufacturer for entire Project, unless otherwise acceptable to Architect.
- B. Insulation Thermal Properties: Thermal resistance R-values indicated are values at 75 degree mean temperature. Where insulation is identified by R-value, provide thickness required to achieve indicated R-value. Foam plastic insulation R-values are "aged" thermal values in accordance with RIC/TIMA conditioning procedure.
- C. Foam plastic insulation: Foam plastic insulation cores, coatings and facings shall meet the following classification requirements when tested in accordance with ASTM E84.
 - 1. Exterior walls: Flame spread rating of 25 or less; smoke developed rating of 450 or less.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Insulation shall be legibly marked with the following data:
 - 1. Its "R" value per inch and the mean test temperature
 - 2. The manufacturer's name
 - 3. The insulation type and its tradename
 - 4. Water vapor transmission (perm inch average)
 - 5. UL rating – flame spread, fuel contribution, smoke developed (ASTM E84 and D1692)
- B. Deliver insulation materials in manufacturer's original, unopened, and labeled packages.
- C. Provide adequate protection for all materials stored on site and after installation. Protect insulation from physical damage, and from becoming wet and soiled.
- D. Protect plastic insulation as follows:
 - 1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
 - 2. Protect against ignition at all times. Do not deliver plastic insulating materials to Project site before installation time.
 - 3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

1.05 ENVIRONMENTAL CONDITIONS

- A. Do not install insulation during inclement weather or when surfaces are moist.
- B. Do not install fiberglass batt insulation in exterior wall assemblies until exterior sheathing has been installed and joints sealed and air barrier has been fully applied to exterior face of sheathing in accordance with applicable Division 07 Section.

1. Insulation that is exposed to moisture due to inadequate or compromised environmental protections, or that becomes wet or moist by other means subsequent to installation, shall be completely removed and discarded, and replaced with new materials.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Rigid insulation board (extruded polystyrene):
 - a. DuPont de Nemours, Midland, MI.
 - b. Owens-Corning Co., Parsippany, NJ.
 - c. Kingspan Insulation NA, Atlanta, GA
 2. Glass Fiber Batt Insulation:
 - a. CertainTeed Corp., Valley Forge, PA
 - b. Owens-Corning, Toledo, OH
 - c. Johns Manville, Denver, CO

2.02 GLASS-FIBER BLANKET INSULATION

- A. Fiberglass Batt/Blanket Insulation: Glass or other inorganic fibers and resinous binders formed into flexible batts or blankets.
 1. Unfaced Glass Fiber Insulation (typically in exterior walls and ceilings as indicated on drawings):
 - a. ASTM C665, Type I, preformed formaldehyde free glass fiber batt type, passing ASTM E136 for combustion characteristics.
 2. Where glass-fiber blanket insulation is indicated by the following thicknesses, provide blankets in batt or roll form with thermal resistances indicated:
 - a. 3-1/2 inches thick with a thermal resistance (R-value) of 11.
 - b. 5-1/2 inches thick with a thermal resistance (R-value) of 19.
 3. Fire Rating: ASTM E84, Flame spread 25 or less and smoke development 50 or less.
 4. Non-combustible: classified non-combustible per ASTM E136 at 750°C
 5. Acceptable Manufacturers:
 - a. Commercial Blanket Insulation, CertainTeed Corp.
 - b. Unfaced Commercial Insulation, Johns Manville.
 - c. PINK NextGen Fiberglas Insulation, Owens Corning.

2.03 FOAM-PLASTIC BOARD INSULATION

- A. Foundation Perimeter Board Insulation: Rigid closed-cell, extruded polystyrene thermal board insulation formed from polystyrene base resin by an extrusion process using hydrochlorofluorocarbons as blowing agent to comply with ASTM C578 for type and with other requirements indicated below:
 1. Thermal Resistivity: Not less than 5 per inch ft² x h x °F/Btu x in. 75 deg F mean temp.
 2. Thickness or Thermal Resistance (R-Values): As scheduled; value determined at not less than 6 months after manufacture.
 - a. Where insulation is indicated by the following thicknesses, provide boards with thermal resistances indicated:
 - 1) 2 inches thick with a thermal resistance (R-value) of 10.
 3. Classification: ASTM C578, Type IV, density of 1.45 lb./cu ft. minimum density.
 4. Fire Rating: Surface-burning characteristics: Maximum flame spread and smoke-developed indices of 15 and 175, respectively.
 5. Acceptable Manufacturers:
 - a. Basis of Design: DuPont Styrofoam Brand Scoreboard
 - b. Kingspan GreenGuard.

- c. Owens Corning Foamular.

2.04 AUXILIARY INSULATING MATERIALS

- A. Rigid Board Adhesives: Provide insulation manufacturer's recommended adhesives for sealing joints and bonding insulation to substrates shown. Adhesives shall be compatible with insulation materials secured.
- B. Tape: Self-adhering pressure sensitive, compatible with insulation, foil type recommended by manufacturer of insulation.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and to determine if other conditions affecting performance of insulation are satisfactory. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Prepare surfaces and areas to receive insulation material as required by the manufacturer. Do not install materials in unsatisfactory areas or to improperly prepared surfaces.
- B. Clean substrates of substances harmful to insulations including removing projections capable of puncturing vapor retarders or that interfere with insulation attachment.
- C. Verify substrate and conditions under which insulation work is to be performed. Do not proceed with installation until unsatisfactory conditions have been corrected.
- D. Verify substrate surface is clean, flat, dry, free of irregularities, and ready to receive insulation materials.

3.03 INSTALLATION – GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and applications.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
- C. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- D. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

3.04 INSTALLATION – RIGID BOARD INSULATION

- A. Foundation Insulation: Install board insulation on foundation perimeter with adhesive in accordance with manufacturer's instructions.
 - 1. Stagger board joints.
 - 2. Butt edges and ends tight to adjacent board and to protrusions.
 - 3. Extend boards over expansion joints, unbonded on one side of joint.
- B. On vertical surfaces, set units in adhesive applied according to manufacturer's written instructions. Use adhesive recommended by insulation manufacturer.
 - 1. Bond with adhesive to vertical substrate. Stagger all joints. Butt edges and ends tight to adjacent board with no protrusions.
 - 2. Protect insulation from displacement and damage during backfilling and slab placement.
- C. Install boards on exterior walls vertically and hold in place with Z-furring channels spaced at maximum 24 inches on center.
 - 1. Install panels and furring channels progressively starting at corner condition. Space furring channels not more than 12 inches from corner at interior corners and not more than 3 inches from corner at exterior corners.

2. Install insulation full height of wall. Stagger horizontal joints. Cut insulation to fit non-standard spaces. Bond with adhesive to vertical substrate.

3.05 INSTALLATION – BATT INSULATION

- A. Provide batt insulation where indicated and where the insulation is not part of another Specification Section. Install insulation after plumbing, mechanical, and electrical services have been installed.
- B. Install fiberglass blankets/batts in cavities formed by framing members according to the following requirements:
 1. Where more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends. Use batts free of damage and stagger butt joints.
 2. Place blankets/batts in cavities formed by members to produce a friction fit between edges of insulation and adjoining framing members.
 3. Provide mechanical fasteners, wire mesh, or other accessories to ensure insulation remains in specified position.
 4. Fit insulation tight within spaces and tight to exterior side of plumbing, mechanical, and electric services within plane of insulation leaving no gaps or voids.
 5. Cut and fit tightly around all obstructions and fill all voids around all cutouts for lights, cabinets, pipes and plumbing, HVAC ducts, electrical boxes, and other irregularities. Provide 3 inch clearance around non-IC recessed light fixtures unless lighting fixtures are rated for contact with insulation.
 6. Install insulation within framing systems full height and width. Do not allow voids or openings to occur. Insulation is required for full width between studs, including cavity of each stud.
 7. Cut insulation oversize to ensure tight butt joints when installed. Cut insulation to fit around protrusions and irregularly shaped projections.
- C. Stuff glass fiber loose fill insulation into miscellaneous voids and cavity spaces where shown. Compact to approximately 40 percent of normal maximum volume (to a density of approximately 2.5 pcf).

3.06 PROTECTION

- A. Protect installed insulation and vapor retarders from harmful weather exposures and from possible physical abuses, where possible non-delayed installation of concealing work, or where that is not possible, by temporary covering or enclosure.
- B. Seal all cuts, punctures and penetration of integral insulation vapor barriers with vapor barrier tape before installing surface finishes.

END OF SECTION

SECTION 07 26 00
CRAWL SPACE VAPOR RETARDER

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Section includes installation of a vapor retarder on the crawl space floor and foundation walls to reduce ground moisture infiltration and properly encapsulate the crawl space.
- B. Related Sections:
 - 1. Section 03 30 00 – Cast-in-Place Concrete (for substrate preparation).
 - 2. Section 06 10 00 – Rough Carpentry (for framing adjacent to vapor retarder).
 - 3. Section 07 21 00 – Thermal Insulation: Perimeter foundation wall insulation

1.02 REFERENCES

- A. ASTM International:
 - 1. ASTM E1745 – Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.
 - 2. ASTM E96 – Standard Test Methods for Water Vapor Transmission of Materials.
 - 3. ASTM D1709 – Impact Resistance of Plastic Film.
 - 4. ASTM D882 – Tensile Properties of Thin Plastic Sheeting.
 - 5. ASTM D1922 – Propagation Tear Resistance of Plastic Film.
 - 6. ASTM E154 – Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs.

1.03 ACTION SUBMITTALS

- A. Product Data: Manufacturer's specifications, installation instructions, and physical properties for vapor retarder, tapes and accessories.
- B. Samples: 12 x 12 inch sample of vapor retarder material.
- C. Manufacturer's certification of compliance with ASTM E1745 Class A vapor retarder requirements.
- D. Installation Certification: Submit certification that vapor retarder was installed in accordance with manufacturer's instructions.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Experienced in installation of crawl space vapor retarders with at least 3 similar projects.
- B. Pre-Installation Conference: Conduct conference to review substrate conditions, surface preparation, installation procedures, transitions, and protection of completed work.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's unopened, labeled rolls.
- B. Store materials in a clean, dry location out of direct sunlight.
- C. Protect materials from damage, punctures, and contamination.

1.06 PROJECT CONDITIONS

- A. Do not install vapor retarder over wet or frozen substrates.
- B. Substrates shall be smooth, free of sharp projections, debris, or moisture prior to installation.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design:
 - 1. Stego Industries LLC – StegoCrawl Wrap 15-mil.
- B. Acceptable Manufacturers:
 - 1. Raven Industries – VaporBlock.
 - 2. Americover - GuardianLiner.
 - 3. Or approved equal meeting specified performance requirements.

2.02 MATERIALS

- A. Crawl Space Vapor Retarder:
 - 1. Material: Multi-layer polyethylene and polyester scrim reinforced white sheet membrane.
 - 2. Color: White, for increased visibility and light reflectance.
 - 3. Nominal Thickness: 15 mils.
 - 4. Minimum Physical Properties:
 - a. Water Vapor Permeance (ASTM E96, Procedure A): ≤ 0.01 perms as tested in accordance with mandatory conditioning tests per ASTM E1745.
 - b. Tensile Strength (ASTM D882): ≥ 45 lbf/in.
 - c. Puncture Resistance (ASTM D1709): ≥ 2200 grams.
 - d. Tear Resistance (ASTM D1922): ≥ 5000 grams.
 - 5. Classification: ASTM E1745 Class A vapor retarder.

2.03 ACCESSORIES

- A. Seaming Tape: Manufacturer's recommended white adhesive tape for sealing seams and penetrations.
- B. Fasteners: Non-corrosive mechanical fasteners and termination bars as recommended by manufacturer for vertical attachment.
- C. Termination Bar: Aluminum or stainless-steel bar with pre-drilled holes, to mechanically fasten vapor retarder to foundation wall.
- D. Foundation Wall Transition Membrane:
 - 1. Compatible sheet or liquid-applied air barrier material capable of transitioning between crawl space vapor retarder and air barrier above-grade
- E. Mastic/Sealant: As recommended by vapor retarder manufacturer.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify crawl space floor is free of sharp objects, debris, standing water, and has been graded smooth.
- B. Verify masonry walls are free of loose material, protrusions, and are sound.

3.02 PREPARATION

- A. Repair substrate irregularities that would interfere with installation.
- B. Install over a smooth, level, compacted surface.

3.03 INSTALLATION

- A. Install vapor retarder in strict accordance with manufacturer's written instructions.

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- B. Install vapor retarder over entire crawl space floor, overlapping seams a minimum of 6 inches, and sealing with manufacturer's approved tape.
- C. Extend vapor retarder up masonry foundation walls, sealing to wall surface with adhesive.
- D. Mechanically fasten vapor retarder to foundation wall using termination bar and appropriate fasteners.
- E. Seal top edge of vapor retarder to above-grade air barrier with specified transition membrane, ensuring continuous airtight and vapor-resistant connection.
- F. Protect installed vapor retarder from damage during construction. Inspect for punctures, tears, and incomplete seals; repair with manufacturer's recommended patching materials.

3.04 PROTECTION

- A. Protect completed installation from puncture, tearing, and exposure to sunlight.

END OF SECTION

SECTION 07 27 00
AIR BARRIERS

PART 1 – GENERAL

1.01 SUMMARY

- A. Provide self-adhering, sheet air barriers over moisture-resistant gypsum sheathing in new exterior wall assemblies. Section includes:
 - 1. Related accessories including primer, flashing membranes, sealants, and termination materials.
- B. Related Sections:
 - 1. Section 06 16 00 – Sheathing
 - 2. Section 07 92 00 – Joint Sealants
 - 3. Section 07 46 46 – Fiber Cement Siding

1.02 REFERENCES

- A. ASTM D1970 – Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials.
- B. ASTM E2178 – Air Permeance of Building Materials.
- C. ASTM E2357 – Air Barrier Assembly Testing.
- D. ASTM E331 – Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
- E. AAMA 711 – Voluntary Specification for Self-Adhering Flashing Used for Installation of Exterior Wall Fenestration Products.

1.03 ACTION SUBMITTALS

- A. Product Data: For air barrier membrane, primers, flashings, and accessories.
- B. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.
- C. Shop Drawings: Show details at terminations, penetrations, joints, and transitions.
- D. Product Certificates: Certify compliance with performance and code requirements.
- E. Warranty: Sample manufacturer's warranty..

1.04 PERFORMANCE REQUIREMENTS

- A. Material Performance: Provide air barrier materials which have an air permeance not to exceed 0.004 cubic feet per minute per square foot under a pressure differential of 1.57 pounds per square foot (0.004 cfm/ft² @ 1.57 psf), [0.02 liters per square meter per second under a pressure differential of 75 Pa (0.02 L/(s·m²) @ 75 Pa)] when tested in accordance with ASTM E2178 (unmodified).
- B. Assembly Performance: Provide a continuous air barrier in the form of an assembly that has an air leakage not to exceed 0.04 cubic feet per minute per square foot under a pressure differential of 1.57 pounds per square foot (0.04 cfm/ft² @ 1.57 psf) [0.2 liters per square meter per second under a pressure differential of 75 Pa (0.2 L/(s·m²) @ 75 Pa)] when tested in accordance with ASTM E2357. The assembly shall accommodate movements of building materials by providing expansion and control joints as required. Expansion / control joints, changes in substrate and perimeter conditions shall have appropriate accessory materials at such locations.

1.05 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

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- B. Manufacturer: Obtain primary ABAA Evaluated Materials from a single ABAA Evaluated Manufacturer regularly engaged in manufacturing specified self-adhered sheet air barriers. Obtain secondary materials from a source acceptable to the primary material manufacturer
- C. Installer Qualifications: Trained and certified by air barrier manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original, unopened packaging.
- B. Store in dry location at temperatures recommended by manufacturer.
- C. Protect from exposure to sunlight and sources of heat over 120°F.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Carlisle Coatings & Waterproofing, Henry Company, W.R. Meadows, Inc.
- B. Acceptable Manufacturers (self-adhered sheet air barrier system):
 - 1. Self-Adhered Sheet Air Barrier: Self-adhered membrane composed of flexible facing material coated completely and uniformly on one side with adhesive material, formed into uniform, flexible sheets, interleaved with disposable release liner that is removed prior to installation. Use regular, high temperature or low-temperature formulation depending on site conditions, within temperature ranges specified by material manufacturer. Subject to compliance with requirements, provide one of the following:
 - a. Carlisle Coatings & Waterproofing – Barriseal
 - b. Henry Company – Blueskin® SA
 - c. W. R. Meadows – Air-Shield™ SA
- C. Substitutions: In accordance with Section 01 25 00 – Substitution Procedures.

2.02 MATERIALS

- A. Self-Adhered Air Barrier Membrane
 - 1. Membrane: Composite sheet consisting of self-adhering rubberized asphalt or synthetic adhesive laminated to a protective film.
 - 2. Thickness: Minimum 40 mils.
 - 3. Air Permeance: < 0.02 L/s·m² @ 75 Pa (ASTM E2178)
 - 4. Assembly Air Leakage: < 0.2 L/s·m² @ 75 Pa (ASTM E2357)
 - 5. Water Resistance: No leakage (ASTM E331, 300 Pa for 2 hours)
 - 6. UV Exposure Limit: Minimum 60 days unless otherwise noted by manufacturer.
- B. Auxiliary Materials:
 - 1. Primer: Liquid waterborne primer recommended for substrate by manufacture of air barrier material.
 - a. Compatible with substrate and membrane.
 - 2. Flashing Membrane: Self-adhered flashing membrane compatible with air barrier system.
 - a. Use for corners, rough openings, penetrations, and transitions.
 - 3. Accessories:
 - a. Termination mastic
 - b. Liquid flashing or detailing sealant
 - c. Reinforcing mesh (if required for detail areas)

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify substrates are clean, dry, smooth, and free from frost, laitance, or other bond-breaking materials.
- B. Ensure sheathing is fastened per manufacturer's instructions with no loose panels or protruding fasteners.

3.02 SURFACE PREPARATION

- A. Clean substrate of dirt, dust, oil, and other contaminants.
- B. Prime surfaces where required, allow to dry per manufacturer's instructions.

3.03 INSTALLATION

- A. Install air barrier membrane in accordance with manufacturer's written instructions.
- B. Overlap seams minimum 2 inches horizontally and 6 inches vertically, unless otherwise recommended.
- C. Roll membrane with pressure roller to ensure adhesion.
- D. Install flashings and detailing around penetrations, windows, corners, and changes in plane before main membrane.
- E. Seal all terminations, laps, and penetrations with compatible sealant.
- F. Coordinate installation with subsequent cladding and flashing.

3.04 FIELD QUALITY CONTROL

- A. Perform adhesion tests as required by manufacturer.
- B. Inspect for holes, gaps, and fishmouths. Patch per manufacturer's guidelines.
- C. Test installed membrane per ASTM E1186 or other air leakage test methods if required by project.

3.05 PROTECTION

- A. Protect membrane from damage by other trades or exposure to elements beyond exposure rating.
- B. Repair punctures or damage immediately using manufacturer-approved patching method.

END OF SECTION

SECTION 07 31 29
WOOD SHINGLES

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Western Red Cedar wood shingles on roof surfaces.
 - 2. Full coverage waterproof roof underlayment.
- B. Related Sections:
 - 1. Section 06 10 00 – Rough Carpentry
 - 2. Section 07 62 00 – Sheet Metal Flashing and Trim
 - 3. Section 07 72 00 – Roof Accessories

1.02 REFERENCES

- A. Cedar Shake & Shingle Bureau (CSSB) – Installation Guidelines

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
- B. Samples: Submit two representative samples of each material specified indicating visual characteristics and finish. Include range samples if variation of finish is anticipated.
- C. Warranty: Submit manufacturer's standard warranty. Include labor and materials to repair or replace defective materials.
 - 1. Warranty Period: 30 years.

1.04 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. Mock-Ups: Provide mock-up as required to demonstrate quality of workmanship.
- C. Installer Qualifications: Minimum 5 years' experience installing wood shingle roofing systems.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store shingles and underlayment materials under cover, off ground, with good ventilation.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Wood Roof Shingles:
 - 1. Manufacturer:.
 - 2. Type: Western red cedar smooth-sawn CSSB's "Grading Rules for Certigrade Red Cedar Shingles."
 - 3. Size:
 - a. Length: 18 inches as specified.
 - b. Width: Random width, minimum 3 inches.
 - c. Thickness: Tapersawn or handsplit & resawn as scheduled.

4. Accessories:
 - a. Fire-Retardant Treatment: Exterior type, pressure-treated units.
 - b. Preservative Treatment: AWPA C34.
 - c. No. 30 asphalt-saturated felt or synthetic breathable underlayment..
 - d. Metal flashing and drip edge.
 - e. Prefabricated hip and ridge shingles.
5. Fasteners:
 - a. Corrosion-resistant stainless steel or hot-dipped galvanized nails.
 - b. Length to penetrate a minimum of 3/4" into deck.

2.02 UNDERLAYMENT

- A. Type: Full-coverage self-adhering ice and water shield membrane
- B. Material: Rubberized asphalt with polyethylene top surface
- C. Minimum Thickness: 40 mils
- D. Manufacturer: [e.g., Grace Ice & Water Shield, or approved equal]

2.03 VENTILATION UNDERLAYMENT

- A. Manufacturer: Benjamin Obdyke Cedar Breather®
- B. Material: Spun entangled nylon matrix
- C. Thickness: 0.25" (6.4 mm)
- D. Function: Provides continuous airflow and drainage beneath wood shingles to prevent moisture buildup and premature decay.

2.04 FLASHING

- A. Metal flashing: 26-gauge minimum stainless steel, copper, or aluminum as specified.
- B. Step flashing at roof-to-wall intersections.

2.05 ZINC STRIPS

- A. Material: Solid zinc
- B. Width: 3 inches (76 mm)
- C. Thickness: Minimum 0.027"
- D. Location: Continuous at ridge, and spaced every 10 feet vertically up slope or as needed based on roof design to reduce moss/algae.

2.06 FASTENERS

- A. Type: Stainless steel ring-shank nails, Type 316 or 304
- B. Quantity: Two per shingle
- C. Placement: 3/4" from each edge, 1" above exposure line

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Inspect substrates for proper slope, soundness, and readiness to receive shingles.
- B. Verify roof deck is smooth, dry, clean, and properly fastened.
- C. Do not begin installation until unsatisfactory conditions have been corrected.

3.02 UNDERLAYMENT INSTALLATION

- A. Install full-coverage self-adhering underlayment over entire roof deck, starting at eaves and working upslope with 6" overlaps.
- B. Lap all vertical joints a minimum of 6".
- C. Extend underlayment up vertical walls a minimum of 6".
- D. Seal around penetrations, valleys, ridges, and eaves.

3.03 SHINGLE INSTALLATION

- A. Install over Cedar Breather® with recommended spacing and exposure. Butt adjacent rolls tightly and fasten per manufacturer's instructions.
- B. Install wood shingles per manufacturer's instructions and Cedar Shake & Shingle Bureau (CSSB) guidelines.
- C. Offset joints a minimum of 1-1/2 inches between adjacent courses.
- D. Maintain minimum 1/8" to 1/4" gap between adjacent shingles.
- E. Maintain weather exposure per product grade and slope:
 - 1. 18 inch shingles: Max 5-1/2 inch exposure
- F. Nail each shingle with two fasteners, 3/4" from edge and 1" above exposure line. Drive nails flush without splitting the wood.
- G. Provide proper ventilation per code and product recommendations.

3.04 PROTECTION

- A. Protect finished roofing from damage during construction..
- B. Replace broken or split shingles prior to substantial completion.

END OF SECTION

SECTION 07 46 46
FIBER CEMENT SIDING

PART 1 – GENERAL

1.01 SUMMARY

- A. Provide fiber cement siding and trim as an exterior façade treatment, applied as a rainscreen system over furring/drainage plane and insulation on cold-formed metal framing.

1.02 SUBMITTALS

- A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
- B. Samples: Submit two representative samples of each material specified indicating visual characteristics and finish. Include range samples if variation of finish is anticipated.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers, which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Siding made from fiber-cement board that complies with ASTM C 1186, Type A, Grade II; is classified as noncombustible when tested according to ASTM E 136; and has a flame-spread index of 25 or less when tested according to ASTM E 84.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Basis of Design: James Hardie Building Products, Mission Viejo, CA.
 - b. CertainTeed Corp.
 - c. Nichiha Fiber Cement

2.02 SIDING COMPONENTS

- A. Fiber-Cement Panels: Assembly of fiber cement vertical cladding panels, installed with wall furring as a rainscreen air gap, and accessories.
 - 1. Panel Nominal Thickness: Not less than 5/16 inch (8 mm).
 - 2. Panel Sizes: As indicated for manufacture's standard 48 inches wide by 96 inches long, and 48 inches wide by 102 inches long panels.
 - 3. Surface Texture: Smooth.
 - 4. Finish: Sanded smooth and sealed substrate with field applied paint finish.
 - 5. Factory sealed on all sides; field seal cut edges prior to installation.
- B. Finishing:
 - 1. Finish: Shop-applied primer for field finish.
 - 2. Finish System: See Section 09 91 00

2.03 TRIM

- A. Trim: Individual horizontal boards made of cement and cellulose fiber formed under high pressure with integral surface texture, complying with ASTM C1186 Type A Grade II.
 - 1. Texture: Smooth.

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2. Length: 12 ft, nominal.
3. Width: As detailed.
4. Thickness: 3/4 inch, nominal.
5. Finish: Factory applied topcoat.
6. Color: As selected by Architect.
7. Warranty: 50 year limited; transferable.

2.04 ACCESSORIES

- A. Siding Fasteners: Corrosion resistant (stainless steel or hot- dipped galvanized) siding nails, 0.091 inch shank with minimum 0.221 inch head, of sufficient length to penetrate into sheathing a minimum of 3/4 inch or full depth.
- B. Trims: Profiles supplied by James Hardie. Aluminum alloy 6063-T5 with a minimum thickness of 0.050 inch. All reveal trims are 8 feet in length.
- C. Manufacturer Primer: Primed for field painting; coating tested to ASTM D3363, ASTM D3359, D2794, D4585, D523, and D1308.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Allow for expansion and contraction. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.
- B. Restore damaged components. Clean and protect work from damage.

END OF SECTION

SECTION 07 62 00
SHEET METAL FLASHING

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Formed steep-slope roof sheet metal fabrications.
 - 2. Formed roof-drainage sheet metal fabrications.
 - 3. Miscellaneous formed sheet metal components and accessories.
- B. Related Sections:
 - 1. Section 06 10 00 – Rough Carpentry: Wood nailers.
 - 2. Section 07 92 00 – Joint Sealants for exposed elastomeric sealants.

1.02 COORDINATION

- A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.
- B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

1.03 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

1.04 ACTION SUBMITTALS

- A. Prepare the following submittals per requirements of Section 01 33 00 – Submittal Procedures.
- B. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.
- C. Shop Drawings: For sheet metal flashing and trim.
 - 1. Include plans, elevations, sections, and attachment details.
 - 2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details.
 - 3. Distinguish between shop- and field-assembled work.
 - 4. Include identification of material, thickness, weight, and finish for each item and location in Project.
 - 5. Include details for forming, including profiles, shapes, seams, and dimensions.
 - 6. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
 - 7. Include details of termination points and assemblies.
 - 8. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.

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9. Include details of roof-penetration flashing.
 10. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, and counterflashings as applicable.
 11. Include details of special conditions.
 12. Include details of connections to adjoining work.
 13. Detail formed flashing and trim at scale of not less than 1-1/2 inches per 12 inches.
- D. Samples for Initial Selection: For each type of sheet metal and accessory indicated with factory- applied finishes.
- E. Samples for Verification: For each type of exposed finish.
1. Sheet Metal Flashing: 12 inches long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
 2. Trim, Metal Closures, Expansion Joints, Joint Intersections, and Miscellaneous
 3. Fabrications: 12 inches long and in required profile. Include fasteners and other exposed accessories.

1.05 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For fabricator.
- B. Product Test Reports: For each product, for tests performed by a qualified testing agency.
- C. Sample Warranty: For special warranty.

1.06 QUALITY ASSURANCE

- A. General: Where procedures of fabrication and installation are not specified or shown otherwise, comply with Architectural Sheet Metal Manual, published by Sheet Metal and Air Conditioning Contractors National Association, Inc. (Current edition), referenced as SMACNA Manual, and National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual, for minimum gage and seaming requirements.
- B. Installer Qualifications: Engage an experience Installer who has completed sheet metal flashing and trim work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- C. Provide accessories and items essential for the completeness of the sheet metal installation. Such items, unless otherwise shown on the drawings or specified, shall be the same kind of material as the item to which applied. Nails, screws, and bolts shall be of the types suited for the purpose intended, and shall be compatible with the metal which it will contact.
- D. Upon completion of the work of this Section, sheet metal work shall be weathertight and watertight.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. General: Comply with requirements specified in Section 01 60 00 – Product Requirements.
- B. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
- C. Deliver, handle and store sheet metal items in a manner to prevent damage to surfaces, edges and ends, and to avoid wet storage stains or rusting.

1.08 PRODUCT CONDITIONS

- A. Coordinate work of this Section with interfacing and adjoining Work for proper sequencing of each installation. Ensure best possible weather resistance, durability of Work, and protection of materials and finishes.
- B. Measurements: Verify drawing dimensions with actual field conditions. Inspect related work and adjacent surfaces. Report all conditions which prevent proper execution of this work.

PART 2 – PRODUCTS

2.01 SHEET MATERIALS

- A. Lead-Coated Copper Sheet:
1. Material: ASTM B101, 99.9% copper sheet coated on both sides with a minimum of 12 to 15 lb. per 100 sq ft of rolled lead.
 2. Thickness: Minimum 16 oz/sq ft (0.0216 inch nominal thickness), unless otherwise indicated.
 3. Finish: Matte gray lead coating, uniform in appearance and free of streaks, voids, or delamination.
 4. Source: Provide products from a single manufacturer to ensure uniformity of appearance and compatibility..

2.02 ROOF DRAINAGE SHEET METAL FABRICATIONS

- A. Hanging Gutters: Fabricate to cross section indicated, complete with end pieces, outlet tubes, and other accessories as required. Fabricate in minimum 120-inch- long sections. Furnish flat-stock gutter spacer/bracket and hanger rods fabricated from same metal as gutters, of size recommended by SMACNA but not less than twice the gutter thickness. Fabricate expansion joints, expansion-joint covers, gutter bead reinforcing bars, and gutter accessories from same metal as gutters.
1. Profile:
 - a. Half-round profile similar to SMACNA Fig. 1-3A.
 - b. Drops: Fabricated to seal at gutter penetration and nest inside downspout, similar to SMACNA Fig. 1-24C, round.
 2. Mounting Style:
 - a. Half-round profile, prefabricated strap hanger: SMACNA Fig. 1-20A.
 - 1) Type: External half-round hanger straps or rods; heavy-duty, spaced not more than 30 inches o.c.
 - b. Attachment: Lag-screwed into roof deck blocking, as appropriate.
 3. Material: Provide minimum gauge for gutter size and material as listed in SMACNA Table 1-5 unless noted otherwise
 - a. Lead-Coated Copper: 16 oz/sq ft (0.0216 inch nominal thickness).
 4. Spacers and Brackets: Flat-stock spacers and brackets fabricated from same metal as gutters, wrapped in metal; to match gutter, of size recommended by SMACNA but not less than twice the gutter thickness. Spacing: 3'-0" o.c.
 - a. Brackets:
 - 1) Lead-coated copper: 0.1875" x 1".
 - b. Spacers: 1/16" x 1", space alternately with brackets.
 - c. Elbows, offsets and End Caps
 5. Gutter Bead Reinforcing Bars: 1/8" flat stock material to match gutter.
 6. Strainer: Copper, similar to SMACNA Fig. 1-24D, round.
 - 1) Wire ball downspout strainer.
- B. Downspouts: Fabricate downspouts to dimensions indicated, complete with mitered elbows. Furnish with metal hangers from same material as downspouts and anchors. Shop fabricate elbows.
1. Profile: Sizes as indicated on the Drawings.
 - a. Round: Similar to SMACNA Fig. 1-31B (2)
 2. Material: Lead-Coated Copper: 16 oz/sq ft (0.0216 inch nominal thickness Fabricated Hanger Style:
 - a. Round: Similar to SMACNA Fig. 1-35J.
 - b. Spacing: 6'-0" intervals vertically
- C. Downspout brackets: Fabricate from 1/16" by 1" lead-coated copper. Finish to match downspout.

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- D. Drip Edge: Fabricate edge items to profiles indicated. Fabricate to a minimum 96 inch long sections. Furnish cleat attachment and other required accessories at same metal.
 - 1. Fabricate from: : Lead-Coated Copper: 16 oz/sq ft.
 - 2. Fasteners: Stainless steel.
- E. Plumbing Vent Flashings: Lead-coated Copper.

2.03 STEEP-SLOPE ROOF SHEET METAL FABRICATIONS

- A. Apron, Step, Cricket, and Backer Flashing: Fabricate from the following materials:
 - 1. Lead-Coated Copper: 16 oz/sq ft (0.0216 inch nominal thickness).
- B. Drip Edges: Fabricate from the following materials:
 - 1. Lead-Coated Copper: 16 oz/sq ft (0.0216 inch nominal thickness).
- C. Eave, Rake, Ridge, and Hip Flashing: Fabricate from the following materials:
 - 1. Lead-Coated Copper: 16 oz/sq ft (0.0216 inch nominal thickness).

2.04 UNDERLAYMENT MATERIAL

- A. High Temperature Grade Water Barrier Underlayment (Under exposed to view sheet metal): Cold applied, self-adhering membrane composed of a high density, cross laminated polyethylene film coated on one side with a layer of butyl rubber or high temperature asphalt adhesive. Comply with temperature restrictions of underlayment manufacturer for installation. Provide primer when recommended by water barrier manufacturer.
 - 1. Minimum Thickness: 30 to 40 mil.
 - 2. Tensile Strength: ASTM D 412 (Die C Modified); 250 psi.
 - 3. Membrane Elongation: ASTM D 412 (Die C Modified); 250%
 - 4. Permeance (Max): ASTM E96; 0.05 Perms.
 - 5. Service Temperature: 300 degrees F
 - 6. Products:
 - a. Carlisle Coatings & Waterproofing Inc.; CCW WIP 300HT
 - b. GCP Applied Technologies (Grace); Ultra.
 - c. Henry Company; Blueskin PE200 HT.
 - d. Polyguard Deckguard HT.

2.05 SHEET METAL ACCESSORIES

- A. General: Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal unless otherwise indicated.
- B. Fasteners: Provide same metal as sheet metal or other non-corrosive compatible metal recommended by sheet metal manufacturer. Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.
- C. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- D. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.
- E. Downspout Boot: Cast iron rainwater leader. Verify dimensional requirements and provide adapters to connect to soil pipe and downspout leader.
 - 1. Product Standard: Neenah R-4926 Series Downspout Shoe.

2.06 FABRICATION, GENERAL

- A. Fabricate components in accordance with SMACNA "Architectural Sheet Metal Manual" and NRCA "Roofing Manual – Architectural Metal Flashing."

- B. Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
 - 1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
 - 2. Obtain field measurements for accurate fit before shop fabrication.
 - 3. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
 - 4. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.
- C. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
- D. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.
 - 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
 - 2. Use lapped expansion joints only where indicated on Drawings.
- E. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.
- F. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
- G. Seams: Fabricate nonmoving seams with flat-lock seams.

2.07 FASTENERS AND ACCESSORIES

- A. Fasteners:
 - 1. Type: Stainless steel or copper nails and screws, non-corrosive, compatible with lead-coated copper.
 - 2. Nails: Ring-shank or annular-grooved with large heads for secure attachment; minimum No. 11 gauge.
 - 3. Screws: Stainless steel, with neoprene washers if exposed.
 - 4. Spacing: As recommended by SMACNA and NRCA guidelines, unless otherwise shown on drawings.
- B. Solder and Flux:
 - 1. Solder: ASTM B32, Grade 50A (50% tin/50% lead) or Grade 60A (60% tin/40% lead).
 - 2. Flux: Non-corrosive, chloride-free, specifically formulated for use with lead-coated copper.
- C. Sealants:
 - 1. Type: Butyl-based or high-performance polyurethane sealant compatible with lead and copper.
 - 2. Use: At expansion joints, terminations, and dissimilar material transitions as indicated or required.
- D. Underlayment and Isolation Materials:
 - 1. Separation Sheet: Rosin-sized building paper or slip sheet, 30 lb. asphalt-saturated felt, or polyethylene sheet where lead-coated copper contacts dissimilar metals or absorbent materials.
 - 2. Bituminous Coating: Asphaltic or bituminous paint for isolating copper from incompatible substrates.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.
 - 1. Verify compliance with requirements for installation tolerances of substrates.
 - 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
 1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of welds, and sealant.
 2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
 3. Space cleats not more than 12 inches apart. Attach each cleat with at least two fasteners.
 4. Bend tabs over fasteners.
 5. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
 6. Torch cutting of sheet metal flashing and trim is not permitted.
 7. Do not use graphite pencils to mark metal surfaces.
- B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure- treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
 1. Coat concealed side of uncoated-aluminum and stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
 2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.
 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.
 2. Use lapped expansion joints only where indicated on Drawings.
- D. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws and substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.
- E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
- F. Seal joints as required for watertight construction.
 1. Use sealant-filled joints unless otherwise indicated. Embed hooked flanges of joint members not less than 1 inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F.
 2. Prepare joints and apply sealants to comply with requirements in Section 07 92 00 "Joint Sealants."
- G. Rivets: Rivet joints in uncoated aluminum where necessary for strength.

3.03 UNDERLAYMENT INSTALLATION

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

3.04 ROOF-DRAINAGE SYSTEM INSTALLATION

- A. General: Install sheet metal roof-drainage items to produce complete roof-drainage system according to cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.
- B. Hanging Gutters: Provide double bead half-round gutter profile, 6-inch size, with roof-mounted rod hangers. Join sections with soldered joints. Provide for thermal expansion. Slope gutters to direct water to downspouts. Provide end closures and seal watertight with soldered joints.
 - 1. Hangers: Double bead half round lead coated copper gutter hanger
- C. Downspouts: Join sections with 1-1/2-inch telescoping joints.
 - 1. Provide hangers with fasteners designed to hold downspouts securely to walls. Locate hangers at top and bottom and at approximately 60 inches o.c.
 - 2. Provide elbows at base of downspout to direct water away from building.
 - 3. Connect downspouts to underground drainage system.

3.05 ROOF FLASHING INSTALLATION

- A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard. Provide concealed fasteners where possible, and set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.
- B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate at staggered 3-inch centers.
- C. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in FM Global Property Loss Prevention Data Sheet 1-49 for FM Approvals' listing for required windstorm classification.
- D. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 inches over base flashing. Lap counterflashing joints minimum of 4 inches. Secure in waterproof manner by means of snap-in installation and sealant or lead wedges and sealant unless otherwise indicated.
- E. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with elastomeric sealant and clamp flashing to pipes that penetrate roof.

3.06 CLEANING AND PROTECTION

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

END OF SECTION

SECTION 07 92 00
JOINT SEALANTS

PART 1 – GENERAL

1.01 SUMMARY

- A. Provide joint sealers at interior and exterior vertical and horizontal joints. Establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

1.02 SUBMITTALS

- A. Submit product data including catalog cuts, specification data, installation details, and manufacturer's certificate for each type of sealant required under the provisions of Section 01 33 00 – Submittal Procedures.
- B. Product/Location List: Submit for approval a detailed list of locations where materials will be used, types of sealants which will be used at each location, and names of manufacturers of compounds, primers, and fillers which will be used. Submit manufacturer's certificate attesting that their products comply with specification requirements and are suitable and recommended for the use indicated.
- C. Color: Submit manufacturers printed color charts for color selections. Provide cured joint sealant samples in colors required for the work, showing the full range of colors available for each product exposed to view. Selection of color for exterior sealants will be made to match Architect's color samples.
- D. Submit compatibility and adhesion test reports from elastomeric sealant manufacturer indicating that materials forming joint sealant backings have been tested for compatibility and adhesion with joint sealants. Include sealant manufacturer's interpretation of test results relative to sealant performance and recommendations for primers and substrate preparation needed to obtain adhesion.

1.03 SYSTEM PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.
- B. Provide joint sealants for interior applications produced and installed to establish and maintain airtight continuous seals that are water resistant and cause no staining or deterioration of joint substrates.

1.04 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. Obtain joint sealant materials from a single manufacturer for products specified in this section, unless specifically noted otherwise.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original, tightly sealed containers or unopened packages with manufacturer's name, labels, product identification, and lot numbers clearly legible.
- B. Store materials out of weather in original containers or unopened packages as recommended by manufacturer.
- C. Do not use materials stored for a period of time exceeding the maximum recommended shelf-life of the material.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply joint sealers under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside the limits permitted by the joint sealer manufacturer.
 - 2. When joint substrate are wet due to condensation or other causes.

3. When joint widths are less than allowed by the joint sealer manufacturer for the application indicated.
 4. When joint widths are less than allowed by the joint sealer manufacturer for the application indicated or narrower than minimum tolerance shown for the joint on shop drawings.
 5. When joint widths are wider than tolerances permit for that joint.
- B. Apply joint sealants as late as possible in the construction, preceding application of water repellent coatings if any, and painting and following cleaning operations.
- C. Do not install solvent curing sealants in unventilated building spaces.
- D. Notes on drawings indicating sealants are not intended to indicate the type of material required unless identified by type specifically. Refer to Article “Elastomeric Joint Sealant Schedule” in this section.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with requirements, products which may be incorporated in the work as low-modulus neutral curing silicone sealants include products of the following manufacturers:
1. Dow Corning Corporation.
 2. Sika Corporation, Construction Products Division
 3. Tremco Inc.
- B. Subject to compliance with requirements, products which may be incorporated in the work as the other specified sealants include products of the following manufacturers, and others as specified:
1. Sika Corporation, Construction Products Division
 2. Tremco Inc.
 3. May National Associates, Inc
 4. Pecora
 5. BASF Building Systems

2.02 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
- B. Performance/Design Criteria: Provide exterior and interior elastomeric joint sealants establishing and maintaining water tight, water resistant and air tight continuous joint seals without staining or deteriorating joint substrates.
- C. Ensure elastomeric sealants comply with Standards specified herein for type, grade, class and uses.
- D. Provide products with capability, when tested for adhesion and cohesion under maximum cyclic movement in accordance with ASTM C719, to withstand required percentage change in joint width existing at time of installation and remain in compliance with other requirements of ASTM C920 for uses indicated.
- E. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range for this characteristic or custom colors formulated by the manufacturer for specific locations.

2.03 ELASTOMERIC JOINT SEALANTS

- A. Elastomeric Sealant Standard: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant in the Elastomeric Joint-Sealant Schedule at the end of Part 3, including those referencing ASTM C 920 classifications for type, grade, class, and uses.
- B. Additional Movement Capability: Where additional movement capability is specified in the Elastomeric Joint-Sealant Schedule, provide products with the capability, when tested for adhesion and cohesion under maximum cyclic movement in accordance with ASTM C 719, to withstand the specified percentage change in the joint width existing at the time of installation and remain in compliance with other requirements of ASTM C 920 for uses indicated.

- C. Stain-Test-Response Characteristics: Where elastomeric sealants are specified in the Elastomeric Joint-Sealant Schedule to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

2.04 JOINT-SEALANT BACKING

- A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, of type indicated below and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:
 - 1. Type C: Closed-cell material with a surface skin.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.05 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants with joint substrates.
- C. Cleaners for Porous Surfaces: Expect that existing precast concrete edges will be required to be ground to remove all previous sealant residue and to provide an acceptable surface for new sealant.
- D. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

2.06 ELASTOMERIC JOINT SEALANT SCHEDULE

- A. Medium-Modulus Neutral-Curing Silicone Sealant: Where joint sealants of this type are indicated, provide products complying with the following:
 - 1. Acceptable Products: Provide one of the following:
 - a. Dow Corning 756 SMS;
 - b. Sika Sikasil WS 290 or WS 295.
 - c. Tremco, Spectrum 3.
 - 2. Type and Grade: S (single component) or multi-component, and NS (nonsag), complying with ASTM C920.
 - 3. Class: 25, Class +50/-50, or +100/-50 per product specification.
 - 4. Use Related to Exposure: NT (nontraffic).
 - 5. Uses Related to Joint Substrates: G, M, A, and as applicable to joint substrates indicated, O.
 - 6. Stain-Test-Response Characteristics: Nonstaining to porous substrates in accordance with ASTM C 1248.
 - 7. Applications: All exterior vertical non-painted joints which include the following.
 - a. Exterior joints in vertical surfaces and horizontal nontraffic listed as follows:
 - b. Joints bordered on both sides by non-porous building material (coated and uncoated metals, anodized aluminum, and glass)
 - c. Joints bordered on one side by porous building material (concrete, stone, masonry) And other side by non-porous building material (coated and uncoated metals, anodized aluminum, and glass).
 - d. Construction joints in cast-in-place concrete.
 - e. Control and expansion joints in masonry including stone masonry and unit masonry.
 - f. Control joints and perimeter of penetrations in ceilings, soffits, and overhead surfaces.
 - g. Joints between metal panels.
 - h. Penetrations through exterior walls
 - i. Interior perimeter joints of exterior openings.

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- j. Other joints as indicated.
- B. Multicomponent Nonsag Urethane Sealant: Where joint sealants of this type are indicated, provide products complying with the following:
- 1. Acceptable Products: Provide one of the following:
 - a. Sikaflex 1A.
 - b. Pecora Dynatrol 1 XL
 - c. Tremco, Dymeric 240 FC.
 - 2. Type and Grade: M (multicomponent) and NS (nonsag) complying with ASTM C920.
 - 3. Class: 25.
 - 4. Uses Related to Exposure: NT (nontraffic).
 - 5. Uses Related to Joint Substrates: M and A, and, as applicable to joint substrates indicated.
 - 6. Applications Interior joints in vertical surfaces and horizontal nontraffic surfaces including interior perimeter joints of exterior openings.
 - a. Control and expansion joints on exposed interior surfaces of exterior walls.
 - b. Interior Perimeter joints of exterior openings
 - c. Vertical joints on exposed surfaces of interior unit masonry and concrete walls and partitions.
 - d. Tile control and expansion joints
 - e. Perimeter joints between interior wall surfaces and frames of interior doors, windows and elevator entrances.
 - f. Intersection of metals with masonry, concrete, or stone.
 - g. Under (bedding) of thresholds.
 - h. Intersection of dissimilar wall surfaces.
- C. Multicomponent Pourable Urethane Sealant: Where joint sealants of this type are indicated, provide products complying with the following:
- 1. Acceptable Products: Provide one of the following:
 - a. NR-200 Urexpan; Pecora Corporation.
 - b. SL 2; Sonneborn Building Products Div., BASF.
 - c. THC-900/901; Tremco.
 - d. Sika 2C SL
 - 2. Type and Grade: M (multicomponent) and P (pourable) complying with ASTM C920.
 - 3. Class: 25.
 - 4. Uses Related to Exposure: T (traffic).
 - 5. Uses Related to Joint Substrates: M and A, and, as applicable to joint substrates indicated.
 - 6. Applications:
 - a. Exterior and Interior joints in horizontal traffic surfaces
 - b. Isolation joints in cast-in-place concrete slabs.
 - c. Other joints as indicated.
- D. Latex Sealant: Where joint sealants of this type are indicated, provide products complying with the following:
- 1. Acceptable Products: Provide one of the following:
 - a. BASF Building Systems; Sonolac
 - b. Bostik Findley; Chem-Calk 600.
 - c. Pecora Corporation AC-20
 - d. May National Associates, Inc, Bondaflex 700.
 - e. Tremco. Tremflex 834
 - 2. Applications:
 - a. Intersection of door frames with gypsum board.
 - b. Intersection of door frames with concrete or masonry.
 - c. Penetration of electrical raceways, piping, or where ductwork.
 - d. Intersection of grilles or louvers with adjacent surfaces.
 - e. Wall and ceiling joints not subject to movement.
 - f. Joints at dissimilar materials, not subject to movement.
 - g. Wall and ceiling joints between frames and their rough opening.

- E. Mildew-Resistant Silicone Sealant : Where joint sealants of this type are indicated, provide products formulated with fungicide that are intended for sealing interior ceramic tile joints and other nonporous substrates that are subject to in-service exposures of high humidity and temperature extremes, and that comply with the following:
1. Acceptable Products: Provide one of the following:
 - a. Dow Corning 786 Mildew Resistant.
 - b. GE Silicones Sanitary SCS1700.
 - c. May National Associates, Inc, Sil 100 WF Bondaflex.
 - d. Pecora Corporation 898 Silicone Sanitary Sealant.
 - e. Tremco, Tremsil 200 Sanitary.
 2. Type and Grade: S (single component) and NS (nonsag).
 3. Class: 25.
 4. Use Related to Exposure: NT (nontraffic).
 5. Uses Related to Joint Substrates: G, A, and, as applicable to joint substrates indicated, O.
 6. Applications:
 - a. Interior Sanitary Joints: Joints between plumbing fixtures and adjoining floor, wall, and ceiling surfaces; joints between back splashes and wall substrates and between backsplashes and countertops.
 - b. Other joints as indicated.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 JOINT CONSTRUCTION

- A. For typical butt sealant joints, place the backer rod or bond breaker so the sealant depth measured at the center of the joint after tooling is one-half of the sealant joint width, with a minimum depth of 1/4 in. and a maximum depth of 1/2 in. Avoid three-sided adhesion at all sealant joints.
- B. Configure the joints as shown on the Drawings. At fillet (triangular) joints, extend the sealant at least 3/8 in. onto the substrate beyond the bond breaker tape or backer rod and at least 5/8 in. onto the substrate perpendicular to the tape or rod. The minimum thickness between the edge of the tape or rod and surface of the sealant joint shall be 1/4 in. Do not prepare or seal over masonry that is less than twenty-one days old or was repointed within twenty-one days.
- C. Provide sealant weeps so that their spacing does not exceed 24 in. o.c. unless shown otherwise on the Drawings.

3.03 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint sealant manufacturer's written instructions and the following requirements:
 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air. Porous joint surfaces include the following:
 - a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.

3. Remove laitance and form-release agents from concrete.
 4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
 - a. Metal.
 - b. Glass.
 - c. Glazed surfaces of ceramic tile.
- B. Joint Priming: Prime joint substrates where recommended in writing by joint sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.
- D. Provide joint backer material uniformly to depth required by sealant manufacturer, for proper joint design using blunt depth instrument.
1. Fit securely by compressing backer material 25 percent to 40 percent so no displacement occurs during tooling. Avoid stretching or twisting joint backer.
- E. Provide bond breaker where indicated or recommended by sealant manufacturer, in accordance with manufacturers installation requirements.

3.04 INSTALLATION

- A. General: Comply with joint sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Inspect each cartridge or container of sealant before use and verify that the production date is within 6 months of the date of application. Remove from the site all sealant more than six months old. Each applicator shall understand the method of coding the production date on the cartridge.
- C. Mask all exposed surfaces, not masked for priming, along joint before applying sealant.
- D. Recheck correct backer rod and bond breaker tape positioning before applying sealant.
- E. Apply sealant only to clean, dry, primed surfaces (where required) at ambient temperatures above 45°F. Seal joints within 10 hours of primer application.
- F. Sealant Installation Standard: Comply with recommendations of ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- G. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
1. Provide clean, dry backup rod or quarter-round rod in, or over, all joint openings against dry substrates. Remove all wet materials from the job site. Replace any backer rod not sealed over by the end of each day and solvent-clean surfaces again.
 2. Do not leave gaps between ends of sealant backings.
 3. Do not rupture the skin of the closed cell backer rod during installation. Do not cut rod lengthwise as substitute for smaller-diameter rod. Remove any rod containing punctures and solvent clean the surfaces again.
 4. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- H. Coordinate work with other trades to prevent contamination of fresh sealant by dust or other debris.
- I. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and back of joints.
- J. Recheck correct backer rod and bond breaker tape positioning before applying sealant.
- K. Install sealants by proven techniques to comply with the following and at the same time backings are installed:
1. Place sealants so they directly contact and fully wet joint substrates.

2. Completely fill recesses provided for each joint configuration.
 3. Apply sealant only to clean, dry, primed surfaces (where required) at ambient temperatures above 45°F. Seal joints within 10 hours of primer application.
 4. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- L. Fill all joints solidly and continuously with sealant, neatly applied with a standard caulking gun in a continuous motion, using a slight pressure. "Push" the sealant bead ahead of the nozzle; do not "drag" the nozzle.
- M. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
1. Dry tool the joint surface with a concave tool to ensure intimate contact with substrate and to eliminate air bubbles
 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 3. Provide concave joint configuration in accordance with Figure 5A in ASTM C 1193, unless otherwise indicated.
 4. Remove excess sealants from surfaces adjacent to joint.
- N. Mate joints formed from different colored sealants before skin forms on the sealant.
- O. Remove masking tape within 10 minutes of tooling. Avoid contaminating adjacent surfaces with excess sealant. Remove all traces of smears and droppings on metal or glass surfaces promptly, using a solvent recommended by the sealant manufacturer that will not damage or discolor the building surfaces. Remove smears and droppings on porous surfaces by mechanical means after the initial cure of the sealant.

3.05 ADJUST AND CLEANING

- A. Clean surfaces of materials adjacent to sealant as work progresses.
1. Use solvent or cleaning agent as recommended by manufacturer.
 2. Leave all finished work in a neat, clean, watertight condition.

3.06 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Contract Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from the original work.

END OF SECTION

SECTION 08 01 80
MAINTENANCE OF GLASS AND GLAZING

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Removal and replacement of broken or missing glass in existing window sashes using traditional putty glazing.
 - 2. Supply and installation of replacement glass and accessories.
 - 3. Related surface preparation and clean-up

1.02 ACTION SUBMITTALS

- A. Prepare the following submittals in accordance with Section 01 33 00 – Submittal Procedures.
 - 1. Product data: for each glass product and glazing material indicated.
 - 2. Samples: 8-inch-square, for each type of glass and film product indicated.

1.03 QUALITY ASSURANCE

- A. Glazier Qualifications: Installer shall have a minimum of 3 years' experience in glazing repair and maintenance.

1.04 MOCKUP

- A. Provide one (1) mockup window glazing installation in an existing sash at location directed by Architect/Owner to demonstrate:
 - 1. Quality of workmanship.
 - 2. Appearance of face glazing.
 - 3. Cleanliness and finish.
- B. Do not proceed with remaining work until mockup has been reviewed and accepted by Architect/Owner.
- C. Accepted mockup may remain in place as part of the Work if undamaged at project completion.

PART 2 – PRODUCTS

2.01 GLASS PRODUCTS

- A. Annealed float glass: ASTM C 1036, type 1 (transparent flat glass), quality-q3; class 1.
- B. Optional: Historic Restoration Glass:
 - 1. Full Restoration Glass:
 - a. Manufacturer: Specify manufacturer, e.g., Bendheim, or approved equal
 - b. Characteristics: Hand-made or machine-drawn glass with light distortion consistent with historic glazing.
 - c. Thickness: Approx. 1/8 inch (3 mm), or as required to match existing.
- C. Sizes: Fabricate glass to sizes required for glazed openings indicated, with edge clearances and tolerances complying with recommendations of glass manufacturer/ fabricator. Provide thickness indicated and for application indicated.

2.02 GLAZING MATERIALS

- A. Glazing Putty:
 - 1. Traditional linseed oil-based glazing compound suitable for wood sash glazing.
 - 2. Product: Sarco Type M, Dap 33 acrylic or approved equal.

- B. Glazier's Points:
 - 1. Triangular steel points, sized appropriately for sash thickness.
- C. Primer:
 - 1. Oil-based or shellac primer for wood glazing rabbets, compatible with putty and sash finish.
- D. Glazing tape for setting of glass units: as recommended by glass fabricator for installation in primed wood sashes.

2.03 MISCELLANEOUS GLAZING MATERIALS

- A. Glazing points: triangle glazier points, zinc. If wood glazing bars are deep enough to conceal The units, zinc push points may be used.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify existing sash is structurally sound and capable of supporting new glass.
- B. Notify Architect/Owner of any damaged or deteriorated sash that requires repair before glazing.

3.02 PREPARATION

- A. Protect adjacent finishes from damage and debris.
- B. Remove loose or flaking paint and debris from sash glazing rabbet.
- C. Prime bare wood surfaces of rabbets and allow to dry.

3.03 REMOVAL OF EXISTING GLASS

- A. Carefully remove remaining fragments of broken glass.
- B. Remove glazier's points completely from rabbets without damaging sash.
- C. Removal of Existing Hardened Putty:
 - 1. Soften hardened putty by applying gentle heat with an appropriate heat gun or infrared heating tool, or by mechanical means if necessary.
 - 2. Use care to avoid scorching wood or damaging surrounding paint surfaces.
 - 3. Remove all putty residue completely from glazing rabbet using putty knife, chisel, or scraper, maintaining clean and sound wood surfaces.
 - 4. Remove dust and debris from rabbet prior to proceeding with new glazing.

3.04 INSTALLATION OF NEW GLASS

- A. Cut new glass to fit opening with approximately 1/16 inch clearance on all sides.
- B. Apply a thin bed of glazing putty to rabbet to receive glass.
- C. Set glass into opening, press gently into putty bed to achieve full contact.
- D. Secure glass with triangular glazier's points, spaced not more than 8 inches apart on all sides, and at least 2 per side.
- E. Putty installation: working from a ball of glazing compound, press glazing into rabbet with a Putty knife, filling all voids and pressing against wood muntin. Strike to form a sharp bevel, apply face glazing putty over glass edges, neatly tooled to a smooth beveled profile.
- F. Remove excess putty and clean glass surface immediately.

3.05 CLEANING AND PROTECTION

- A. Clean glass surfaces of putty residue, smears, and debris without scratching glass.
- B. Protect glazed sash from damage until final acceptance.

3.06 CLEANING AND PROTECTION

- A. Protect exterior glass from damage immediately after installation by attaching crossed streamers To framing held away from glass. Remove nonpermanent labels, and clean surfaces. Protect Glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove Substances immediately as recommended by glass manufacturer.
- B. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

END OF SECTION

SECTION 08 14 33
STILE AND RAIL WOOD DOORS

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes new stile and rail interior wood doors as detailed and scheduled.
- B. Related Sections:
 - 1. Section 06 10 00 – Rough Carpentry: Wood blocking
 - 2. Section 06 40 23 – Interior Architectural Woodwork.
 - 3. Section 08 71 00 – Door Hardware: Door hardware.
 - 4. Section 09 91 00 – Painting: Site finishing doors.

1.02 REFERENCES

- A. Window and Door Manufacturers Association (WDMA):
 - 1. ANSI/WDMA I.S. 6A- Industry Standards for Architectural Stile and Rail Doors.

1.03 ACTION SUBMITTALS

- A. Prepare submittals in accordance with Section 01 33 00 – Submittal Procedures.
- B. Product Data: Submit door manufacturers/fabricators product for each type of door required, including details of construction.
- C. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door and frame construction details not covered in Product Data, including those for stiles, rails, panels, and moldings (sticking); and other pertinent data. Key manufacturers/fabricators shop drawing door elevation door types to architect's drawing elevations. Include the following in shop drawings:
 - 1. Veneer species
 - 2. Dimensions of doors for fitting.
 - 3. Locations and dimensions of mortises and holes for hardware.
 - 4. Internal blocking for hardware attachment.
- D. Samples: Submit a corner section of each type of door 12 inches square, showing required veneer, stile, rail, core and edge construction with finish.

1.04 QUALITY ASSURANCE

- A. Manufacturer/fabricator Qualifications: A manufacturer/fabricator capable of fabricating doors and frames that meet or exceed performance requirements indicated and of documenting this performance by inclusion in lists and by labels, test reports, and calculations .
 - 1. Knowledge of Site: Bidders shall visit site prior to bid and carefully examine Project scope and conditions that may affect proper execution of work of this Section and determine or verify dimensions and quantities. Contractor's submission of bid shall be acknowledgment that s/he is thoroughly familiar with Project scope and site conditions.
- B. Door manufacturer/fabricator shall provide single source responsibility for the fabrication and assembly of all door and frame assemblies. Single source responsibility for all woodwork, and assembly is preferred.
- C. Standard of Quality:
 - 1. The specifications and drawings define and show the essential minimum requirements for quality of materials, construction, finish and overall workmanship.
 - 2. Information on specifications and drawings establishes requirements for doors aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to

verification by one or more methods including preconstruction testing, field testing, and in-service performance.

3. Minor variations in construction techniques between manufacturer/fabricators will be permitted, providing specified standards of materials, design, function, dimension, configuration, strength, quality and performance are met.

- D. Installer Qualifications: An installer approved by wood door manufacturer/fabricator and regularly engaged in the installation of doors, with not less than five years of successful experience in installation in projects similar to that required for this project. Installation shall have included projects for replacement doors and frames.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Identify each door unit with individual opening numbers as designated on shop drawings, using temporary, removable or concealed markings.
- B. Protect wood doors during transit, storage, and handling to prevent damage, soiling and deterioration. Individually wrap doors in paper or plastic for protection.
- C. Do not delivery doors to the site until the building has been closed in and thoroughly dried out. When moving doors, carry them, do not drag them across each other or against other surfaces.
- D. Stack doors on leveled supports covered with a sheet of plywood or heavy cardboard to protect the face of the bottom door. Cover the top door in a similar manner. Do not store doors in damp areas or freshly plastered areas. Storage area should be dry and well ventilated. Do not subject doors to extremely high or low humidity.

1.06 FIELD MEASUREMENTS

- A. Verification of Measurements: Conduct field investigation to verify individual openings in existing construction by accurate field measurement as required to fit the Work properly and before fabrication. Show recorded field measurements on filed “as-builts” within three (3) weeks after project has been released to the Contractor. Furnish authenticated field measurements on shop drawings.
- B. Field Measurements: Where the new products are to fit to other construction, verify dimensions of other construction by field measurements before fabrication.
- C. Recheck measurements before installing each product.
- D. Site measurements, including but not limited to the coordination and maintenance of trim openings and rough openings, in association with the approved shop drawings, shall be the responsibility of the Installing Contractor.
- E. Before removal or dismantling of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

1.07 PROJECT CONDITIONS

- A. Preparation and maintenance of the site and the provisions for all labor and materials required to successfully install doors and frames shall be the responsibility of the Installing Contractor unless otherwise specified.
 1. Conditioning: Doors shall not be delivered or installed until conditions for temperature and relative humidity have been stabilized and will be maintained in storage and installation areas during the remainder of the construction period to comply with the following requirements applicable to the projects geographical location.
 2. Fasteners, sealants and other materials required to successfully complete the door and frame installation, which are not specified and supplied by the door manufacturer/ fabricator, shall be the responsibility of the Installing Contractor.

1.08 PREINSTALLATION MEETING

- A. Conduct preinstallation meeting at project site. Review methods and procedures related to doors including, but not limited to the following:

1. Conduct conference with attendance and participation of the fabricator and the including the Architect, Contractor, and Installing Contractor.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Inspect and discuss the condition of substrate and other preparatory work performed by other trades.
4. Examine rough openings for proper preparation to receive new door and frames. Review variations in sizes of rough openings.

PART 2 – PRODUCTS

2.01 WOOD MATERIALS

- A. Wood, General: Clear fine-grained lumber; kiln dried to a moisture content of 6 to 12 percent at time of fabrication; free of visible finger joints, blue stain, knots, pitch pockets, and surface checks larger than 1/32 inch deep by 2 inches wide.
- B. Kiln dried to a moisture content of between 6 and 12 percent at time of fabrication; water-repellent preservative treated in accordance with WDMA I.S.4, solid stock (no finger jointing permitted); free of knots, stain, pitch pockets and surface checks. Sand wood stock to finish quality prior to application of prime coat.

2.02 DOOR TYPES

- A. Stile and Rail Doors: Meet or exceed AWI Quality Standards for Stile and Rail Doors requirements and as specified.

2.03 FABRICATION – INTERIOR STILE AND RAIL DOORS

- A. Interior Stile and Rail Doors: Fabricate doors in accordance with AWI "Custom Grade" requirements, Section 1400 for site applied opaque painted finish.
 1. Face Panels: Manufacturer's standard 2-ply face panels with minimum 1/16 inch thick hardwood crossbands.
 2. Face Veneers: Standard thickness, Poplar hardwood in accordance with AWI.
 3. Core:
 - a. AWI Spec Symbol PC-5 Particle Board or LSL-5 Timberstrand for non-rated doors.
 - b. AWI Spec Symbol FD for fire rated doors, bearing Underwriters Laboratories or Warnock Hersey label for fire resistance indicated.
 4. Thickness: As indicated.
 5. Edge Strips: Side edges hardwood species matching face veneer; top and bottom edges hardwood mill option.
 6. Adhesive: AWI 1300-S-3, Type 1 waterproof.
 7. Door Finish: Unfinished, sanded smooth for job site finishing provided under Section 09 91 00 – Painting.
 8. Stile and rail dimensions, molding profiles, panel characteristics, and design as detailed.

2.04 WOOD FRAMES AND JAMBS FOR OPAQUE FINISH

- A. Quality Standard: Meet or exceed AWS Custom Grade, and as necessary to match frames to stile rail doors and historic configurations.
- B. Fabricate wood frames to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
 1. Edges of Solid-Wood (Lumber) Members: 1/16 inch unless otherwise indicated.
- C. Fabricate wood frames members in continuous lengths. No finger jointing is allowed.
- D. Fabricate and machine for tight butt corner joints. Pre-assemble prior to shipping to verify tight joints and fit.
- E. Frame Configurations: As indicated on the Drawings.

2.05 FABRICATION – GENERAL

- A. Fabricate doors in accordance with AWI Quality Standards requirements.
- B. Provide lock blocks at lock edge and elsewhere as required for proper hardware reinforcement.
- C. Vertical Exposed Edge of Stiles: Of same species as veneer facing, to receive finish. No finger jointed stock permitted.
- D. Fit door edge trim to edge of stiles after applying veneer facing.
- E. Bond edge banding to cores.
- F. Prefit and premachine doors for finish hardware in accordance with hardware requirements and dimensions. Do not machine for surface hardware.
 - 1. Comply with tolerance requirements of AWI for prefitting. Machine doors for hardware requiring cutting of doors. Comply with final hardware schedules and door frame shop drawings and with hardware templates and other essential information required to ensure proper fit of doors and hardware.
 - 2. Take accurate field measurements of hardware mortises in metal frames to verify dimensions and alignment before proceeding with machining.
- G. Fabricate stile and rail wood doors in sizes indicated for field fitting.

2.06 PREFITTING AND PREPARATION FOR HARDWARE

- A. Prefit and premachine wood doors, including beveling both edges 1/8 inch in 2 inches. Where pairs of doors are scheduled, prefit and premachine as pairs. Where pairs of doors are scheduled with 3 point latching, lockset and flush bolts, the strike edge of the inactive leaf shall be square.
- B. Rated and nonrated door shall comply with tolerance requirements of NFPA 80 for prefitting. Machine doors for hardware requiring cutting of doors. Comply with final hardware schedules and door frame shop drawings and with hardware templates and other essential information required to ensure proper fit of doors and hardware.
 - 1. Top and hinge edges: 1/8 inch
 - 2. Single door, lock edge: 1/8 inch
 - 3. Pair meeting edge: 1/16 inch per leaf
 - 4. Bottom (rated or nonrated):
 - a. 1/2 inch from decorative floor covering.
 - b. 3/4 inch maximum from top of noncombustible floor.
 - c. 3/8 inch maximum from top of noncombustible sill or threshold.
 - d. Doors with vertical rod exit devices, manual or automatic flush bolts shall be undercut for latching of bolts to a flush floor strike or threshold.
 - e. See Room Finish Schedule, for floor finish materials.

2.07 FINISHES

- A. Interior Wood Finish: Provide the following finish on exposed wood in units:
 - 1. Apply finish painted coating system in accordance Section 09 91 00 – Painting.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify that door frames are of the type required for the door and are installed as required for proper installation of doors.
 - 1. Do not install doors in frames which would hinder the operation of doors.

3.02 INSTALLATION – WOOD FRAMES

- A. Grade: Install wood frames to comply with same grade as item to be installed.

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- B. Assemble wood frames and complete fabrication at project site to the extent that it was not completed in the shop.
- C. Install wood frames level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.
- D. Scribe and cut wood frames to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- E. Secure frames with countersunk, concealed fasteners and blind nailing. Use fine finishing nails for exposed fastening, countersunk and filled flush with woodwork.
 - 1. Anchor wood frames to anchors or blocking built in or directly attached to substrates.
 - 2. Screw frames to wood framing by screwing in from back side of stud where possible.
 - 3. Set exposed fasteners using finish head nails or screws. Fill holes with wood filler.

3.03 INSTALLATION – WOOD DOORS

- A. Install doors in accordance with manufacturers/fabricators printed installation instructions and AWI Section 1700 Installation of Architectural Woodwork (Interior) and Custom Grade Quality Standard.
- B. Conform to AWI requirements for fit tolerances. Coordinate floor clearance with finish floor coverings.
- C. Hardware: For installation, see Division 08 Section "Door Hardware."
- D. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- E. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.
- F. Field-Finished Doors: Refer to the following for finishing requirements:
 - 1. Section 09 91 00 – Painting.

3.04 ADJUSTING AND PROTECTING

- A. Operation: Rehang or replace doors that do not swing or operate freely.
- B. Finished Doors: Replace doors that are damaged or do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.
- C. Adjust hardware so that doors work properly.
- D. Leave doors clean, smooth and in an unblemished condition.

END OF SECTION

SECTION 08 52 00
WOOD WINDOWS

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Installation of new wood window furnished by Owner.

1.02 OWNER-FURNISHED PRODUCTS

- A. The Owner will furnish the following products for installation under this Section:
 - 1. Windows identified in the Window Schedule
- B. Owner's Responsibilities:
 - 1. Furnish products at the Project site in a timely manner.
 - 2. Furnish manufacturer's installation instructions to the Contractor with each product.
- C. Contractor's Responsibilities:
 - 1. Receive, inspect for damage, and report discrepancies to the Owner immediately.
 - 2. Protect windows from damage or loss until final acceptance.
 - 3. Prepare window openings in accordance with window manufacturers instructions.
 - 4. Install windows in accordance with manufacturer's written instructions.
 - 5. Provide all necessary connections, fastenings, and incidental installation materials required for complete installation.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 INSPECTION

- A. Inspect openings before beginning installation. Verify that the opening is correct and all existing deviations from plumb, level and square opening noted. Do not proceed with the installation of the window units until unsatisfactory conditions have been corrected.
 - 1. Masonry surfaces shall be dry and free from excess mortar, sealant, and other construction debris.
 - 2. Coordinate window installation with all flashing, weather-stripping, trim, and other built-in components.

3.02 PREPARATION

- A. Sill Slope: Verify that the rough sill framing of each window opening is sloped to the exterior at a minimum slope of 1/4 inch per foot (2%) to promote drainage of any incidental water toward the exterior.
 - 1. Where necessary, adjust or shim sill framing to achieve required slope before installing window unit.
 - 2. Remove debris, standing water, or obstructions from sill area prior to window installation.
- B. Sill Flashing: Install continuous self-adhering waterproof flashing or pan flashing at sloped sill, extending up jambs at least 6 inches and lapping onto face of exterior wall finish or drainage plane to direct water to exterior.
 - 1. Ensure flashing is installed wrinkle-free, properly adhered, and free of punctures or gaps.
 - 2. Form corners and end dams as recommended by window manufacturer and flashing manufacturer to prevent inward water migration.
 - 3. Do not obstruct drainage path of sill flashing with sealant or foam.

3.03 WINDOW INSTALLATION

- A. Install Owner-furnished products in accordance with manufacturer's instructions and requirements of this Section. Install windows per approved shop drawings, in proper relation to adjoining construction. Do not twist frames or force fit them into poorly prepared openings. Anchor windows to satisfy design requirements.
 - 1. Center window units in wall openings leaving a uniform interface sealant recess on all four sides.
 - 2. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement, and without warp or rack of jamb/frame, sash or glazing, centered in existing openings to minimize variations in trim installation.
 - 3. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.
 - 4. Provide proper support and anchor units securely in place to structural support, and in proper relation to adjacent construction.
 - 5. Verify installation of membrane sill flashing.
 - 6. Separate corrodible surfaces from sources of corrosion or electrolytic action. (dissimilar materials, treated lumber, etc.) at the points of contact with other materials.
 - 7. Place interior seal around window perimeter to maintain continuity of building thermal and air barrier.
 - 8. Seal head trim/jamb and sill members of window to exterior wall with sealant and related backing materials at perimeter of assembly leaving a uniform sealant recess on all four sides of the window.

3.04 ADJUSTING

- A. Adjust operating sash and hardware to provide a tight fit at contact points and weather-stripping and insure smooth operation. Apply lubricants recommended by the window manufacturer.

3.05 SEALING

- A. Perimeter Sealing – Exterior:
 - 1. After window installation and prior to exterior trim application, apply joint sealant to exterior perimeter of window units at jambs and head only. Do not apply sealant along the exterior sill. Omit sealant at sill to allow incidental water infiltration to drain to exterior.
- B. Sealant materials: Use high-quality exterior-grade sealant compatible with wood, flashing, and adjacent substrates. Tool sealant to ensure full contact and weather-tight seal at jambs and head.
- C. Backer rod: Install compressible backer rod at jamb and head joints prior to applying sealant to control sealant depth and profile. Verify that sill flashing or sloped sill properly directs water to the exterior, and that no sealant or obstruction impedes drainage at sill.
- D. Interior Sealing: Apply interior air-sealing sealant at perimeter on the room side of window frame, as recommended, continuous on all four sides for air barrier continuity.
 - 1. Take care to avoid overfilling sill area to preserve exterior drainage path.

3.06 CLEANING

- A. Clean interior and exterior surfaces promptly after installation and on-site finishing. Take care to avoid damage to protective coatings and finishes. Remove excess sealant, mortar, plaster, dirt, grease and other substances.
- B. Clean glass of preglazed windows promptly after installation and on-site finishing. Do not scratch glass with cleaning tools. All glass, especially heated treated or tempered glass, can be easily scratched by certain cleaning compounds and cleaning devices. Do not use solvents that damage or deteriorate the finishes, glazing, glazing compounds or glass sealants.

3.07 INSPECTION AND PROTECTION

- A. Verify that all joints at jambs and head are sealed and weather-tight. Confirm that sill drainage path remains open and unobstructed.
- B. Take necessary precautions to protect window units from damage or deterioration until time of substantial completion of the contract.

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- C. Remove and replace glass that has been broken, chipped, cracked, abraded or damaged until time of substantial completion of the contract.
- D. Execute any warranty work qualifying with the window manufacturer's published warranty until time of substantial completion of the contract.

END OF SECTION

SECTION 08 71 00
DOOR HARDWARE

1.01 SUMMARY

- A. Section includes:
 - 1. Mechanical door hardware
 - 2. Field verification, preparation and modification of existing doors and frames to receive new door hardware.
- B. Related Sections:
 - 1. Section 06 10 00 – 'Rough Carpentry'
 - 2. Section 08 14 33 – Stile and Rail Wood Doors

1.02 REFERENCES

- A. DHI - Door and Hardware Institute
 - 1. Sequence and Format for the Hardware Schedule
 - 2. Recommended Locations for Builders Hardware
 - 3. Keying Systems and Nomenclature
 - 4. Installation Guide for Doors and Hardware
- B. ANSI - American National Standards Institute
 - 1. ANSI A117.1 – 2017 Edition – Accessible and Usable Buildings and Facilities
 - 2. ANSI/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties
 - 3. ANSI/BHMA A156.28 - Recommended Practices for Keying Systems
 - 4. ANSI/SDI A250.8 - Standard Steel Doors and Frames

1.03 ACTION SUBMITTALS

- A. Prepare the following submittals in accordance with Section 01 33 00 – Submittal Procedures for submittal requirements.
- B. General:
 - 1. Submit in accordance with Conditions of Contract and Division 01 Submittal Procedures.
 - 2. Prior to forwarding submittal:
 - a. Comply with procedures for verifying existing door and frame compatibility for new hardware, as specified in PART 3, "EXAMINATION" article, herein.
 - b. Review drawings and Sections from related trades to verify compatibility with specified hardware.
 - c. Highlight, encircle, or otherwise specifically identify on submittals: deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.
- C. Action Submittals:
 - 1. Product Data: Submit technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
 - 2. Samples for Verification: If requested by Architect, submit production sample of requested door hardware unit in finish indicated and tagged with full description for coordination with schedule.
 - a. Samples will be returned to supplier. Units that are acceptable to Architect may, after final check of operations, be incorporated into Work, within limitations of key coordination requirements.
 - 3. Door Hardware Schedule:

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- a. Submit concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work critical in Project construction schedule.
 - b. Submit under direct supervision of a Door Hardware Institute (DHI) certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule published by DHI.
 - c. Indicate complete designations of each item required for each opening, include:
 - 1) Door Index: door number, heading number, and Architect's hardware set number.
 - 2) Quantity, type, style, function, size, and finish of each hardware item.
 - 3) Name and manufacturer of each item.
 - 4) Fastenings and other pertinent information.
 - 5) Location of each hardware set cross-referenced to indications on Drawings.
 - 6) Explanation of all abbreviations, symbols, and codes contained in schedule.
 - 7) Mounting locations for hardware.
 - 8) Door and frame sizes and materials.
 - 9) Degree of door swing and handing.
4. Key Schedule:
- a. After Keying Conference, provide keying schedule that includes levels of keying, explanations of key system's function, key symbols used, and door numbers controlled.
 - b. Use ANSI/BHMA A156.28 "Recommended Practices for Keying Systems" as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
 - c. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
 - d. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
 - e. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion. Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.
 - f. Prepare key schedule by or under supervision of supplier, detailing Owner's final keying instructions for locks.
- D. Informational Submittals:
- 1. Provide Qualification Data for Supplier, Installer and Architectural Hardware Consultant.
 - 2. Provide Product Data:
 - a. Include warranties for specified door hardware.
- E. Closeout Submittals:
- 1. Operations and Maintenance Data: Provide in accordance with Division 01 and include:
 - a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
 - b. Catalog pages for each product.
 - c. Final approved hardware schedule edited to reflect conditions as installed.
 - d. Final keying schedule
 - e. Copy of warranties including appropriate reference numbers for manufacturers to identify project.

1.04 QUALITY ASSURANCE

- A. Qualifications and Responsibilities:
- 1. Supplier: Recognized architectural hardware supplier with a minimum of 5 years documented experience supplying mechanical door hardware similar in quantity, type, and quality to that indicated for this Project. Supplier to be recognized as a factory direct distributor by the manufacturer of the primary materials with a warehousing facility in the Project's vicinity. Supplier to have on staff, a certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant

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- (DHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.
2. Installer: Qualified tradesperson skilled in the application of commercial grade hardware with experience installing door hardware similar in quantity, type, and quality as indicated for this Project.
 3. Architectural Hardware Consultant: Person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and meets these requirements:
 - a. For door hardware: DHI certified AHC or DHC.
 - b. Can provide installation and technical data to Architect and other related subcontractors.
 - c. Can inspect and verify components are in working order upon completion of installation.
 4. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.
- B. Certifications:
1. Accessibility Requirements:
 - a. Comply with governing accessibility regulations cited in "REFERENCES" article herein for door hardware on doors in an accessible route. This project must comply with all Federal Americans with Disability Act regulations and all Local Accessibility Regulations.
- C. Pre-Installation Meetings:
1. Keying Conference
 - a. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:
 - 1) Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
 - 2) Preliminary key system schematic diagram.
 - 3) Requirements for key control system.
 - 4) Requirements for access control.
 - 5) Address for delivery of keys.
 2. Pre-installation Conference:
 - a. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - b. Inspect and discuss preparatory work performed by other trades.
 - c. Review required testing, inspecting, and certifying procedures.
 - d. Review questions or concerns related to proper installation and adjustment of door hardware.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site. Promptly replace products damaged during shipping.
- B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package. Deliver each article of hardware in manufacturer's original packaging.
- C. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.
- D. Provide secure lock-up for door hardware delivered to Project. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.
- E. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.
- F. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.06 COORDINATION

- A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete.
- B. Installation Templates: Distribute for doors, frames, and other work specified to be factory or shop prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- C. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.
- D. Existing Openings: Where existing doors, frames and/or hardware are to remain, field verify existing functions, conditions and preparations and coordinate to suit opening conditions and to provide proper door operation.

1.07 WARRANTY

- A. Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within published warranty period.
 - 1. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.
 - 2. Warranty Period: Beginning from date of Substantial Completion, for durations indicated in manufacturer's published listings.
 - a. Mechanical Warranty
 - 1) Locks
 - a) 10 years
 - 2) Closers
 - a) 25 years

1.08 MAINTENANCE

- A. Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.
- B. Turn over unused materials to Owner for maintenance purposes.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. The Owner requires use of certain products for their unique characteristics and project suitability to ensure continuity of existing and future performance and maintenance standards. After investigating available product offerings, the Awarding Authority has elected to prepare proprietary specifications. These products are specified with the notation: "No Substitute."
 - 1. Where "No Substitute" is noted, submittals and substitution requests for other products will not be considered.
- B. Approval of manufacturers and/or products other than those listed as "Scheduled Manufacturer" or "Acceptable Manufacturers" in the individual article for the product category shall be in accordance with QUALITY ASSURANCE article, herein.
- C. Approval of products from manufacturers indicated in "Acceptable Manufacturers" is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer's product.
- D. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.02 MATERIALS

- A. Fabrication:
 - 1. Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. provide screws according to manufacturer's recognized installation standards for application intended.
 - 2. Finish exposed screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.
 - 3. Provide concealed fasteners wherever possible for hardware units exposed when door is closed. Coordinate with "Metal Doors and Frames", "Flush Wood Doors", "Stile and Rail Wood Doors" to ensure proper reinforcements. Advise the Architect where visible fasteners, such as thru bolts, are required.
- B. Modification and Preparation of Existing Doors: Where existing door hardware is indicated to be removed and reinstalled.
 - 1. Provide necessary fillers, Dutchmen, reinforcements, and fasteners, compatible with existing materials, as required for mounting new opening hardware and to cover existing door and frame preparations.
 - 2. Use materials which match materials of adjacent modified areas.
- C. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.
 - 1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

2.03 HINGES

- A. Manufacturers and Products:
 - 1. Scheduled Manufacturer and Product:
 - a. Ives 5BB series
 - 2. Acceptable Manufacturers and Products:
 - a. McKinney TB series
 - b. Hager BB1191/1279 series
- B. Requirements:
 - 1. Provide hinges conforming to ANSI/BHMA A156.1.
 - 2. Provide five knuckle, ball bearing hinges.
 - 3. 1-3/4 inch (44 mm) thick doors, up to and including 36 inches (914 mm) wide:
 - a. Interior: Standard weight, steel, 4-1/2 inches (114 mm) high
 - 4. 1-3/4 inch (44 mm) thick doors over 36 inches (914 mm) wide:
 - a. Interior: Heavy weight, steel, 5 inches (127 mm) high
 - 5. 2 inches or thicker doors:
 - a. Interior: Heavy weight, steel, 5 inches (127 mm) high
 - 6. Adjust hinge width for door, frame, and wall conditions to allow proper degree of opening.
 - 7. Provide three hinges per door leaf for doors 90 inches (2286 mm) or less in height, and one additional hinge for each 30 inches (762 mm) of additional door height.
 - 8. Where new hinges are specified for existing doors or existing frames, provide new hinges of identical size to hinge preparation present in existing door or existing frame.
 - 9. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
 - a. Steel Hinges: Steel pins
 - b. Non-Ferrous Hinges: Stainless steel pins
 - c. Out-Swinging Interior Lockable Doors: Non-removable pins
 - d. Interior Non-lockable Doors: Non-rising pins

2.04 MORTISE LOCKS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
 - a. Schlage L9000 series
2. Acceptable Manufacturers and Products:
 - a. No Substitute

B. Requirements:

1. Provide mortise locks conforming to ANSI/BHMA A156.13 Series 1000, Grade 1, and UL Listed for 3-hour fire doors.
2. Indicators: Where specified, provide indicator window measuring a minimum 2-3/5-inch x 3/5 inch with 180-degree visibility. Provide messages color-coded using ANSI Z535 Safety Red with full text and/or symbols, as scheduled, for easy visibility. When applicable allows for lock status indication on both sides of the door.
3. Provide locks manufactured from heavy gauge steel, containing components of steel with a zinc dichromate plating for corrosion resistance.
4. Provide lock case that is multi-function and field reversible for handing without opening case. Cylinders: Refer to "KEYING" article, herein.
5. Provide locks with standard 2-3/4 inches (70 mm) backset with full 3/4 inch (19 mm) throw stainless steel mechanical anti-friction latchbolt. Provide deadbolt with full 1-inch (25 mm) throw, constructed of stainless steel.
6. Provide standard ASA strikes unless extended lip strikes are necessary to protect trims.
7. Lever Trim: Solid brass, bronze, or stainless steel, cast or forged in design specified, with wrought roses and external lever spring cages. Provide thru-bolted levers with 2-piece spindles.
 - a. Lever Design: M55A

2.05 CYLINDERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
 - a. Schlage Everest 29 T
2. Acceptable Manufacturers and Products:
 - a. No Substitute

B. Requirements:

1. Provide cylinders/cores compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset; manufacturer's series as indicated. Refer to "KEYING" article, herein.
2. Provide cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.
 - a. Patented Restricted: cylinder with interchangeable core with patented, restricted keyway.
3. Patent Protection: Cylinders/cores requiring use of restricted, patented keys, patent protected.
4. Nickel silver bottom pins.

2.06 KEYING

A. Scheduled System:

1. New factory registered system:
 - a. Provide a factory registered keying system, complying with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.

B. Requirements:

1. Construction Keying:

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- a. Replaceable Construction Cores.
 - 1) Provide temporary construction cores replaceable by permanent cores, furnished in accordance with the following requirements.
 - a) 3 construction control keys
 - b) 12 construction change (day) keys.
 - 2) Owner or Owner's Representative will replace temporary construction cores with permanent cores.
- 2. Permanent Keying:
 - a. Provide permanent cylinders/cores keyed by the manufacturer according to the following key system.
 - 1) Master Keying system as directed by the Owner.
 - b. Forward biting list and keys separately from cylinders, by means as directed by Owner. Failure to comply with forwarding requirements will be cause for replacement of cylinders/cores involved at no additional cost to Owner.
 - c. Provide keys with the following features:
 - 1) Material: Nickel silver; minimum thickness of .107-inch (2.3mm)
 - 2) Patent Protection: Keys and blanks protected by one or more utility patent(s).
 - 3) Geographically Exclusive: Where High Security or Security cylinders/cores are indicated, provide nationwide, geographically exclusive key system complying with the following restrictions.
 - d. Identification:
 - 1) Mark permanent cylinders/cores and keys with applicable blind code for identification. Do not provide blind code marks with actual key cuts.
 - 2) Identification stamping provisions must be approved by the Architect and Owner.
 - 3) Stamp cylinders/cores and keys with Owner's unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with "DO NOT DUPLICATE" along with the "PATENTED" or patent number to enforce the patent protection.
 - 4) Failure to comply with stamping requirements will be cause for replacement of keys involved at no additional cost to Owner.
 - 5) Forward permanent cylinders/cores to Owner, separately from keys, by means as directed by Owner.
 - e. Quantity: Furnish in the following quantities.
 - 1) Permanent Control Keys: 3.
 - 2) Master Keys: 6.
 - 3) Change (Day) Keys: 3 per cylinder/core that is keyed differently
 - 4) Key Blanks: Quantity as determined in the keying meeting.

2.07 DOOR CLOSERS

- A. Manufacturers and Products:
 - 1. Scheduled Manufacturer and Product:
 - a. LCN 4050A series
 - 2. Acceptable Manufacturers and Products:
 - a. Falcon SC70A series
 - b. Norton 7500 series
- B. Requirements:
 - 1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.
 - 2. Provide door closers with fully hydraulic, full rack and pinion action with cast aluminum cylinder.

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3. Closer Body: 1-1/2-inch (38 mm) diameter with 11/16-inch (17 mm) diameter heat-treated pinion journal and full complement bearings.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and all weather requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and back check.
7. Pressure Relief Valve (PRV) Technology: Not permitted.
8. Provide stick on templates, special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.08 DOOR CLOSERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
 - a. LCN 1450 series
2. Acceptable Manufacturers and Products:
 - a. Falcon SC80A series
 - b. Norton 8000 series

B. Requirements:

1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory.
2. Provide door closers with fully hydraulic, full rack and pinion action with cast aluminum cylinder.
3. Closer Body: 1-3/8-inch (35 mm) diameter with 5/8-inch (16 mm) diameter pinion journal diameter heat-treated pinion journal and full complement bearings.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
6. Pressure Relief Valve (PRV) Technology: Not permitted.
7. Provide stick on and special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.09 DOOR TRIM

A. Manufacturers:

1. Scheduled Manufacturer:
 - a. Ives
2. Acceptable Manufacturers:
 - a. Burns
 - b. Trimco

B. Requirements:

1. Provide push plates, push bars, pull plates, pulls, and hands-free reversible door pulls with diameter and length as scheduled.

2.10 PROTECTION PLATES

A. Manufacturers:

1. Scheduled Manufacturer:
 - a. Ives

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2. Acceptable Manufacturers:

- a. Burns
- b. Trimco

B. Requirements:

- 1. Provide protection plates with a minimum of 0.050 inch (1 mm) thick, beveled four edges as scheduled. Furnish with sheet metal or wood screws, finished to match plates.
- 2. Sizes plates 2 inches (51 mm) less width of door on single doors, pairs of doors with a mullion, and doors with edge guards. Size plates 1 inch (25 mm) less width of door on pairs without a mullion or edge guards.

2.11 OVERHEAD STOPS AND OVERHEAD STOP/HOLDERS

A. Manufacturers:

- 1. Scheduled Manufacturers:
 - a. Glynn-Johnson
- 2. Acceptable Manufacturers:
 - a. Rixson
 - b. Sargent

B. Requirements:

- 1. Provide overhead stop at any door where conditions do not allow for a wall stop or floor stop presents tripping hazard.

2.12 DOOR STOPS AND HOLDERS

A. Manufacturers:

- 1. Scheduled Manufacturer:
 - a. Ives
- 2. Acceptable Manufacturers:
 - a. Burns
 - b. Trimco

B. Provide door stops at each door leaf:

- 1. Provide wall stops wherever possible. Provide concave type where lockset has a push button of thumbturn.
- 2. Where a wall stop cannot be used, provide universal floor stops.
- 3. Where wall or floor stop cannot be used, provide overhead stop.

2.13 GASKETING

A. Manufacturers:

- 1. Scheduled Manufacturer:
 - a. Zero International
- 2. Acceptable Manufacturers:
 - a. Reese
 - b. Legacy

B. Requirements:

- 1. Provide gasketing systems as specified and per architectural details. Match finish of other items.

2.14 SILENCERS

A. Manufacturers:

1. Scheduled Manufacturer:
 - a. Ives
 2. Acceptable Manufacturers:
 - a. Burns
 - b. Trimco
- B. Requirements:
1. Provide "push-in" type silencers for hollow metal or wood frames.
 2. Provide one silencer per 30 inches (762 mm) of height on each single frame, and two for each pair frame.
 3. Omit where gasketing is specified.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, wall and floor construction, and other conditions affecting performance. Verify doors, frames, and walls have been properly reinforced for hardware installation.
- B. Field verify existing doors and frames receiving new hardware and existing conditions receiving new openings. Verify that new hardware is compatible with existing door and frame preparation and existing conditions.
- C. Submit a list of deficiencies in writing and proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Where on-site modification of doors and frames is required:
 1. Carefully remove existing door hardware and components being reused. Clean, protect, tag, and store in accordance with storage and handling requirements specified herein.
 2. Field modify and prepare existing doors and frames for new hardware being installed.
 3. When modifications are exposed to view, use concealed fasteners, when possible.

3.03 INSTALLATION

- A. Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.
 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
 2. Installation Guide for Doors and Hardware: DHI TDH-007-20
- B. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.
- C. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.
- D. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.
- E. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- F. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.
- G. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated.
- H. Lock Cylinders:
 1. Install construction cores to secure building and areas during construction period.

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2. Replace construction cores with permanent cores as indicated in keying section.
 3. Furnish permanent cores to Owner for installation.
- I. Door Closers: Mount closers on room side of corridor doors.
 - J. . Mount closers/operators so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.
 - K. Overhead Stops/Holders: Mount overhead stops/holders on room side of corridor doors.
 - L. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.
 - M. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

3.04 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
 1. Spring Hinges: Adjust to achieve positive latching when door can close freely from an open position of 30 degrees.
 2. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
- B. Occupancy Adjustment: Approximately three to six months after date of Substantial Completion, examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

3.05 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items per manufacturer's instructions to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.06 DOOR HARDWARE SCHEDULE

- A. The intent of the hardware specification is to specify the hardware for interior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.
- B. Discrepancies, conflicting hardware, and missing items are to be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application.
- C. Hardware items are referenced in the following hardware schedule. Refer to the above specifications for special features, options, cylinders/keying, and other requirements.
- D. Hardware Sets:

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Hardware Group No. 01

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	F643E/7 16	IVE
1	EA	PRIVACY LOCK W/ OUTSIDE INDICATOR	L9040 M55A L583-363 OS-OCC	643e	SCH
1	EA	OH STOP	100S	643E/71 6	GLY
1	EA	SURFACE CLOSER	1450 REG OR PA AS REQ FC	695	LCN
1	EA	MOUNTING PLATE	1450-18 ST-5011	695	LCN
1	EA	KICK PLATE	8400 8" X 2" LDW B-CS	BLK	IVE
1	EA	MOP PLATE	8400 4"	BLK	IVE
1	EA	GASKETING	488S PSA	BK	ZER

Hardware Group No. 02

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	F643E/7 16	IVE
1	EA	OFFICE/ENTRY LOCK	L9050T M55A L583-363	643e	SCH
1	EA	FSIC CORE	23-030 EV29 T	606	SCH
3	EA	SILENCER	SR66	BRN	IVE

Hardware Group No. 03

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	KEYED POCKET LOCKSET MODERN RECTANGULAR	EMT-2153-KEYED X 1-3/4 SINGLE CYLINDER	BLK	EMT
1	EA	FSIC MORTISE HOUSING	20-059 (BLOCKING RINGS & CAM AS REQ)	643E	SCH
1	EA	FSIC CORE	23-030	606	SCH
1	EA	POCKET DR FRAME KIT	1500SC		JOH

NOTE: (JOH) L.E. JOHNSON PRODUCTS INC.
(EMT) EMTEK

END OF SECTION

SECTION 09 01 20
PLASTER RESTORATION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes repair of existing plaster surfaces, which are indicated to remain and scheduled to receive new finishes, to restore surfaces to their original condition and to provide proper substrate conditions for finish painting.
 - 1. Repair Work includes:
 - a. Repair of plaster surfaces where material is missing, spalled, cracked or otherwise damaged.
 - b. Complete repair and patching of cracks.
 - c. Removal and replacement of all loose or damaged plaster.
 - 2. Cutting and patching of existing plaster to receive new Work.
 - 3. Flat three coat plaster system (scratch, brown, and finish) set on wood or metal lath.
- B. Related Section:
 - 1. Section 01 35 91 – Special Procedures for Historic Treatment
 - 2. Section 01 73 29 – Cutting and Patching

1.02 REFERENCES AND STANDARDS

- A. Publications listed below shall be the most recent issue and will form a part of this Specification to extent referenced. Publications are referred to in text by designation only.
- B. Protection of Site and Historic Properties
 - 1. All work shall be performed in accordance with the "Secretary of the Interior's Standards for Rehabilitation, "U.S. Department of the Interior, National Park Service, 1995." They can be found at <https://www.nps.gov/tps/standards/rehabilitation/rehab/stand.htm>
 - 2. Preservation Brief #21, "Repairing Historic Flat Plaster – Walls and Ceilings" and Preservation Brief #23, "Preserving Historic Ornamental Plaster."

1.03 ACTION SUBMITTALS

- A. Prepare the following submittals per requirements of Section 01 33 00 – Submittal Procedures.
- B. Product Data: Submit manufacturer's product specifications and installation instructions for each material.
- C. Schedule: Submit written program describing in detail sequencing, materials and methods to be used for each type of plaster repair Work.
- D. Restoration Program: Prepare a written, detailed description of materials, methods, equipment, and sequence of operations to be used for each phase of interior and exterior plaster restoration work including protection of surrounding materials and Project site.
 - 1. If materials and methods other than those indicated are proposed for any phase of restoration work, submit a written description of such materials and methods, including evidence of successful use on comparable projects, and demonstrations to show their effectiveness for this Project and worker's ability to use such materials and methods properly.

1.04 SYSTEM REQUIREMENTS

- A. Design Requirements:
 - 1. Design Documents:

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- a. Drawings and Specifications are intended to cover complete restoration of existing plaster Work and to broadly outline finish requirements and material selections.
 - b. Materials and systems are suggestive only.
 2. Design: Contractor shall be responsible for final material, mix and system selections and for making whatever modifications are required to meet local and Project conditions and to achieve desired finish.
 3. Existing materials testing:
 - a. Contractor shall determine testing requirements of existing plaster, including type and extent of test methods.
 - b. Employ materials testing as required to assure that materials and mixes used in repair Work are compatible with existing materials and mixes, in order to provide comparable physical characteristics to preclude any differential shrinkage, movement or color variation which would impair repair Work, including cracking or spalling within repaired or existing Work or between repaired and existing Work.
- B. Visual Requirements:
1. Match existing plaster Work, including color and texture.
 2. Surfaces shall be free of cracks, spalls or similar defects.

1.05 QUALITY ASSURANCE

- A. Qualification Data: Submit with the bid the following information demonstrating Contractor's qualifications and experience with the bid for approval by the Owner.
1. Restoration Specialist Firm Qualifications: Company with at least five years documented experience with Work similar to Work requirements of this Project.
 - a. Company shall be regularly engaged in plaster restoration and repair.
 - b. Company employing workers with experience in restoration procedures referenced in this Section.
 - 1) Work shall be performed by persons whose qualifications have been submitted.
 - c. Foreman: Plaster restoration shall be directly supervised by a full-time foreman, who must have a minimum of five (5) years of experience in the restoration and conservation of historic plaster and the process and operations and shall be present at all times during the execution of the work and shall personally direct the restoration work.
- B. Standards: In addition to standards specified in this Section, comply with the following:
1. Preservation Brief Number 21: "Repairing Historic Flat Plaster," available from the National Park Service, at <http://www.nps.gov/hps/tps/briefs/brief21.htm> SAMPLE INSTALLATIONS

1.06 MOCK-UP

- A. Mockups: Before plastering, install mockups at location indicated by Architect to demonstrate aesthetic effects and set quality standards for materials and execution.
1. Install mockups for the following applications:
 - a. New plaster work: 30 sq. ft.
 - b. Patching existing plaster surface: 5 sq ft.
 - c. Repair: crack patching.
 - d. Repair: rebuilding damaged finish.
 - e. Repair: feathering new plaster into old.
 2. Simulate finished lighting conditions for review of mockups.
 3. Obtain Architect's written acceptance of mockups before start of plaster repair work. Remove and replace mockups as necessary to obtain Architect's approval.
 4. Retain and maintain approved mockups during construction in undisturbed condition.
 5. Approved mockups will be minimal acceptable standard for completed plaster work.
 6. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

7. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- B. Sample panels of each procedure proposed for use in the work shall be submitted for approval. No plaster material shall be used in the work until the samples and the represented mixture have been approved by the Architect.
- C. Approved mock-up of may remain as part of the Work.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to project site promptly without undue exposure to weather.
- B. Deliver materials in manufacturer's unopened container or bundles, fully identified with name, brand, type and grade.
- C. Store in a dry, ventilated space, off the ground.
- D. Protect materials from soiling, rusting and damage.

1.08 PROJECT CONDITIONS

- A. Protection: Protect fixtures, frames, inserts and other contiguous Work from rusting, soiling or clogging due to plastering.
- B. Environmental Requirements:
 1. Comply with requirements of referenced plaster application standards and recommendations of plaster manufacturer for environmental conditions before, during and after application of plaster.
 2. Interior plaster:
 - a. Maintain continuous and uniform building temperatures of not less than 55 F (13 C) and not more than 80 F (27 C) for minimum period of one week prior to and during plastering operations and one week after plaster has set.
 - b. Ventilate building spaces to remove water in excess of that amount required for proper hydration of plaster, immediately after its application and during set.

1.09 SEQUENCING AND SCHEDULING

- A. Perform historic treatment of plaster in the following sequence, which includes work specified in this and other Sections:
 1. Salvage, dismantle, and remove existing surface-mounted objects and hardware that overlie plaster surfaces except items indicated to remain in place. Tag items with location identification and orientation, catalogue, store and protect.
 2. Verify that temporary protections have been installed.
 3. Examine condition of plaster surfaces. Repair and replace existing plaster and supports to the degree required for a uniform, tightly adhered surface on which to paint or apply other finishes.
 4. Re-secure existing plaster to substrates.
 5. Cure repaired surfaces and allow them to dry for proper finishing.
 6. Paint and apply other finishes.
 7. Reinstall dismantled surface-mounted objects and hardware in original locations and orientations unless otherwise indicated.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design Products: Subject to compliance with requirements, provide product specified or a comparable product by of one of the following:
 1. National Gypsum Company.
 2. USG Corporation

2.02 PLASTER MATERIALS

A. General:

1. Provide either neat or ready-mixed materials, at Contractor's option, for plaster complying with referenced standards.
2. Plaster materials shall match existing and, unless otherwise required for proper execution of Work, shall meet specified standards.

B. Plaster Materials:

1. Base-Coat Plasters, General: ASTM C 28/C 28M.
2. Finish-Coat Plasters: Gypsum gauging plaster, ASTM C 28.
 - a. High-strength gypsum gauging plaster, ASTM C 28, with a minimum, average, dry compressive strength of 5000 psi per ASTM C 472 for a neat mix.
 - b. Gypsum casting and molding plaster, ASTM C 59.
3. Finishing Hydrated Limes: ASTM C 206.
 - a. Type: S, special hydrated lime for finishing purposes.
 - b. Finishing Hydrated Limes, Type S:
4. Aggregates for Base-Coat Plasters: ASTM C 35.
5. Aggregates for Finish-Coat Plaster with Floated Finish: ASTM C 35; graded per ASTM C 842

2.03 LATHING MATERIALS

A. Furring and Lathing:

1. General:
 - a. Provide furring and lath materials and accessories as required for proper repair of plaster Work. Match existing materials or provide new materials which will be compatible with existing.
 - b. Size components as required by the Work and to conform to requirements of ASTM C841.
2. Metal furring, lathing and accessories:
 - a. Protective finishes for metal furring and accessories: Shop paint with manufacturer's standard rust inhibitive paint.
 - b. Fabricate from cold-rolled steel, complying with ASTM C847.
 - c. Expanded metal lath: Flat or self-furring diamond mesh, weight as required to comply with referenced standards for type and spacing of supports used in Work; minimum 3.4 lbs./sq.yd. (1.8 kg/sq. m).
 - d. Corner mesh: Diamond mesh expanded metal lath, minimum 2.5.lbs./sq.yd. (1.4 kg/sq. m); 6 inches (150 mm) wide, bent to form 3 inch (75 mm) wings.
 - e. Strip mesh: Diamond mesh expanded metal lath, minimum 2.5.lbs./sq.yd. (1.4 kg/sq. m); 4 inches (100 mm) wide.
 - f. Control joints, corner, casing and stop beads:
 - 1) Not lighter than 26 gage (0.55 mm) (24 gage (0.7 mm) for casing and stop beads), galvanized steel for interior use; profiles to match existing.
 - 2) Flexible corner bead for curved edges: Equivalent to No. 4-A by USG.
 - g. Lath attachment devices: Tie wire or other metal supports, of type and size to suit application; to rigidly secure lathing materials in place.
3. Wood Lath: Lath shall be machine-sawn and shall material and species of existing lath. Assume White Spruce. Size of individual lath strips to match existing historic lath. Dimensions range from 1-1/2" to 1-3/4" (38 mm to 45 mm) wide x 1/8" to 3/16" (3 mm to 5 mm) thick.
4. Provide other materials, including fiberglass mesh and bonding agents, as required for proper execution and conditions of repair Work.

B. Plaster Mixes: Mixes shall match existing as required so that plaster restoration Work is compatible with existing plaster surfaces to remain.

2.04 PLASTER MIXES AND COMPOSITIONS

- A. Plaster Base-Coat Compositions: Comply with ASTM C 842 and Plaster Testing Laboratory's written instructions for plaster base-coat proportions. The following Base Coat mix may have to be adjusted following results of the historic plaster analysis by Testing Laboratory.
 - 1. Base Coat (Two Coat System consisting of Scratch and Brown Coats):
 - a. Scratch Coat: One part fibered gypsum plaster, 2 parts sand, by weight.
 - b. Gypsum Brown Coat: One part gypsum plaster, 3 parts sand, by weight.
 - c. Fiber:
 - 1) Scratch Coats: 1 pound of fiber per 100 lbs. of dry gypsum plaster.
 - 2) Brown Coat: ½ pound of fiber per 100 lbs. of dry gypsum plaster.
- B. Finish Coats: Proportion materials for finish coats to comply with ASTM C 842 and Plaster Testing Laboratory's written instructions for each type of finish coat and texture indicated.
 - 1. Finish Coat: High Gauge Lime Putty; mix 3 parts lime putty to 1 part gauging plaster.

PART 3 – EXECUTION

3.01 EVALUATION AND ANALYSIS

- A. Plaster repair and renovation shall be undertaken only after complete evaluation and analysis of the areas to be repaired are completed; this shall include sampling and testing of the existing plaster to determine its composition and qualities.
 - 1. Repair work shall not be undertaken until conditions that have caused plaster deterioration have been identified; such conditions shall be corrected, if possible, prior to start of the work of this section.
 - a. Furnish gages as necessary to meet deflection requirements, unless indicated or specified otherwise.
 - b. If deterioration cannot be corrected, and work on existing plaster could be subject to additional or new deterioration, do not proceed and inform the Architect immediately.

3.02 WOOD LATHING

- A. Where wood lath is burned, broken missing or otherwise damaged, install new wood lath strips. With a keyhole saw, cut the lath back to the nearest joist, where a replacement section may be fastened. Cut existing lath at a 90 degree angle for splice joint. Use a sharp chisel to cut away damaged lath that bears directly upon a joist.
- B. Drill holes with an electric drill into joists for replacement lath to be attached.
- C. Position the new lath so that spacing matches the existing historic lath providing an adequate keyway for the three coat plaster system.
- D. Screw the replacement laths to the joists.
- E. Reinforce bonding of existing historic lath to joists or wall studs by re-nailing with lath nails to firmly attach.
- F. Vacuum all dust, bits or broken plaster keys, rodent droppings, etc, from the spaces between the lath in such a manner as to prevent it from being drawn completely and firmly back into position.
- G. Install galvanized metal lath over new and historic wood lath. Attach metal lath using lath nails and /or tie wires.

3.03 METAL LATHING

- A. Expanded-Metal Lath: Install expanded-metal lath for the following applications where plaster base coats are required. Provide appropriate type, configuration, and weight of metal lath selected from materials indicated that comply with ASTM C 841.
 - 1. Suspended and Furred Ceilings: Use diamond-mesh lath.

2. Vertical Wood Framing and Furring: Use diamond-mesh lath and wood framing if necessary to match existing.

3.04 PLASTERING ACCESSORIES INSTALLATION

- A. General: Install according to ASTM C 841. Comply with referenced standards for provision and location of accessories. Miter or cope accessories at corners; install with tight joints and in alignment. Attach accessories securely to plaster bases to hold in place and in alignment during plastering.
- B. Accessories:
 1. Cornerbeads: Install at external corners.
 2. Casing Beads: Install at terminations of plasterwork, except where plaster passes behind and is concealed by other work and where metal screeds, bases, or frames act as casing beads.

3.05 PLASTER APPLICATION, GENERAL

- A. Protect contiguous Work from damage and deterioration caused by plastering with temporary covering and other provisions necessary.
- B. Prepare monolithic surfaces for bonded base coats and use bonding compound to comply with requirements of referenced plaster application standards for conditioning monolithic surfaces.
- C. Tolerances: Do not deviate more than 1/8-inch (3 mm) in 10 feet (3 m) from a true plane in finished plaster surfaces, as measured by a 10 foot (3 m) straightedge placed at any location on surface.
- D. Sequence plaster application with the installation and protection of other work, so that neither will be damaged by the installation of the other.
- E. Plaster thicknesses: For new installation, 3/4-inch (19 mm) on metal lath, 5/8-inch (16 mm) on masonry base. On plaster repair and patching, match existing thickness exactly.
- F. Plaster flush with metal frames and other built-in metal items or accessories that act as a plaster ground, unless otherwise indicated. Where plaster is not terminated at metal frame by casing beads, cut base coat free from metal frame before plaster sets and groove finish coat at junctures with metal.

3.06 PLASTER PREPARATION

- A. Plaster Application Standard: Comply with ASTM C 842.
- B. For all interior work: Gypsum plaster to match surface texture of existing adjacent surfaces.
- C. Mechanically mix cementitious and aggregate materials for plasters to comply with applicable referenced application standard and with recommendations of plaster manufacturer.
 1. Scratch Coat: 2 cubic feet or 200 pounds of damp/loose sand per 100 pounds of dry gypsum plaster mix with one pound of synthetic fiber. (ASTM C842)
 2. Brown Coat: 3 cubic feet or 300 pounds of damp/loose sand per 100 pounds of dry gypsum plaster mix with 1/2 pound of synthetic fiber. (ASTM C842)
 3. Finish Coat: 3 parts lime putty to one part gauging plaster.
- D. All materials shall be measured by volume or equivalent weight. Measurement by shovel is not permitted.
- E. Add cool water, slowly stirring as the water is needed. Water shall be added in small quantities only, and the batch shall be completely mixed each time water is added to determine when a workable consistency has been reached.
- F. The mixture should slump gradually when troweled into a loaf shape.
- G. Number of Coats:
 1. Metal Lath: Three coats.
 2. Wood Lath: Three coats.
 3. On masonry substrate with bonding agent: Three coats.
- H. Finish Coats: Match adjacent existing plaster.

3.07 PLASTER APPLICATION

- A. Twenty-four hours prior to applying plaster, thoroughly moisten wood lath with water from a spray bottle. Allow to swell and reach stable condition.
- B. Apply plaster to the dampened wood lath and galvanized metal using the backside of a trowel and force it gently and firmly into the spaces between the laths.
- C. Build up patch in three separate layers to conform to the full thickness of the surrounding existing plaster. The scratch and base coat will support a smooth finish coat.
 - 1. Scratch Coat: Minimum of 1/4" of gypsum/sand/fiber mix.
 - 2. Base Coat: Minimum of 1/4" of gypsum/sand/fiber mix.
 - 3. Finish Coat: Minimum of 1/16" of high gauge lime putty.
- D. When applying the finish coat, use a steel float to smooth the surface so that it is level with the surrounding existing plaster.
- E. Sand or sponge compound to feather into existing surface.
- F. Temperature in the repair area must be kept between 55 and 70 degrees Fahrenheit for the duration of the plaster-curing period. It is the contractor's responsibility to provide necessary equipment to heat the room and provide air circulation to prevent dry-out, freezing and sweat-outs.

3.08 PLASTER REPAIRS

- A. Repaired surfaces shall match adjacent existing surfaces in all respects. Plaster repair shall proceed only after the cause of deterioration has been identified and corrected. Plaster repair shall proceed only after the area to be repaired has been cleaned. The materials, methods and equipment proposed for use in the repair work shall be demonstrated in test panels. The location, number, size and completed test panels shall be subject to approval. Products shall be used in accordance with the manufacturer's instructions.
- B. Plaster Analysis: Existing original historic plaster shall be analyzed before repair or replacement in order to provide a match with the new plaster. Laboratory analysis of the existing plaster shall conform to ASTM C 472.
- C. Sound existing plaster to determine whether it is bonded to the substrate. Cut, patch, point-up, repair and rebuild existing plaster as indicated on the Drawings. Repair or replace work to eliminate blisters, buckles, excessive crazing and check cracking, dry-outs, efflorescence, sweatouts and similar defects and where bond to the substrate has failed. These areas/conditions are observable, but may not be representative of all areas requiring work.
 - 1. Carefully remove all mechanically damaged, water damaged, soft, broken, or loose plaster back to masonry or lathing or to sound plaster, making clean and sharp edges, beveled inward. Do not feather edge.
 - 2. Rake cracks in existing plaster and trowel cut to form an inverted "V" to provide a mechanical key for support of patching plaster.
 - 3. At areas of delaminated finish coat, remove loose white coat and apply bonding agent prior to installation of new finish coat.
- D. Sand smooth-troweled finishes lightly to remove trowel marks and arises. Retexture to match adjacent surfaces.
- E. Match existing adjacent surface profile, thickness and texture. Joinings with plaster previously applied shall finish flush and smooth. Comply with other requirements of this section for related work, additional preparation and accessories.
- F. The intent of the plaster repair and restoration work is to stabilize and preserve as much of the historic fabric as is possible. The Contractor's work shall be directed by this underlying intent.

3.09 CRACK AND PLASTER REPAIRS AT UNBONDED PLASTER

- A. At severely cracked, unsound, and unbonded plaster remove all unsound material down to sound, clean substrate.
 - 1. Where substrate is found unsound repoint, rebuild or replace.

2. Back cut each plaster edge with square or dovetail edge cuts to provide mechanical bond for new plaster.
3. Apply bonding agent uniformly, using a brush or roller to form a continuous pink film over the entire surface. Allow to dry a minimum of one hour. Apply plaster weld (bonding agent) between existing plaster and new plaster coats.
4. At areas where large portions of plaster are missing, expanded metal lath (diamond mesh) shall be mechanically fastened to the substrate, to provide for more reliable keying and to strengthen the patch.
5. Apply plaster in three layers, lapping each new layer of plaster over the old plaster so that old and new are evenly joined.

3.10 CRACK REPAIRS AT BONDED PLASTER

- A. At cracks less than 3/16-inch wide which exist in the finish coat only, apply bonding agent to extend from crack 6 to 9 inches at all sides.
 1. Apply new finish (skim) coat over plaster repair.
- B. At cracks greater than 3/16-inch wide, apply fiberglass mesh tape and joint compound.
 1. Bed mesh fiberglass tape in joint compound, then feather with second and third layer of joint compound. Apply bonding agent and new finish (skim) coat over plaster crack repair.

3.11 REPAIR OF HOLES AND LOSSES

- A. For repair of small holes (less than 4 inches (100 mm) in diameter) where there is loss of only the brown and finish coats, trowel-in-place a layer of base coat plaster and scrape back below the level of the existing plaster.
 1. When the base coat has set but not dried, apply finish coat to create a smooth, level surface which matches the adjacent surfaces.
- B. For repair of large holes (greater than 4 inches (100 mm) in diameter) where all three coats of plaster are damaged or missing, cut back plaster to sound plaster. If lath is damaged, install new lath. Follow application procedures in Article 3.7, Plaster Application.

3.12 REPAIR OF DETERIORATED SKIM COAT

- A. Remove loose and unsound skim coat.
- B. Apply bonding agent to remaining sound skim coat.
- C. Apply new finish (skim) coat over bonding agent.

3.13 FINISH

- A. The exposed surfaces of plaster repair shall match the finish, texture, and surface detail of the original surface.
- B. Mechanical finishing and texturing may be required to produce the required finish and appearance.
- C. The finishing and texturing shall conceal bond lines between the repaired area and adjacent surfaces.
- D. The texturing shall provide replication of all surface details, including tooling and machine marks.
- E. The equipment used in finishing and texturing shall be a low-impact energy type that will not weaken the patch or damage the patch bond and the adjacent or supporting materials.

3.14 CLEANING, REPAIR AND PROTECTION

- A. Work which has been repaired and contains cracks, blisters, pits, checks, or discolorations will not be accepted. Remove such Work, including other rejected Work, and replace with new. Patching of defective Work permitted only after notification of Architect.
- B. Perform cutting, patching, repairing and pointing-up operations neatly and thoroughly.

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1. Repair cracks and indented surfaces by moistening plaster and filling with new material, troweled or tamped flush with adjoining surfaces.
 2. Where new plaster adjoins plaster which has been installed more than 48 hours, cut existing plaster at an angle of approximately 45 with surface before installing new plaster.
- C. Remove plaster spillage promptly from adjoining Work.
- D. Remove protective coverings used to protect other Work. Repair or replace surfaces which have been damaged by plastering Work.
- E. Protect plaster from the weather, freezing, premature drying, marking, dirt, dust, marring or other damage throughout construction period so that it will be without any indication of damage at time of acceptance.

END OF SECTION

SECTION 09 01 60
REFINISHING WOOD FLOORING

PART 1 – GENERAL

1.01 SUMMARY

- A. The Project consists of the restoration and repair of the wood plank flooring.
- B. Related Sections:
 - 1. Section 01 43 30 – Mockups

1.02 DESCRIPTION OF WORK

- A. Work of the project involves restoration and repair of a historically significant feature in a historically significant building. All surfaces in the building shall be treated respectfully. The existing conditions are to be respected completely and treated with the utmost care and no material or building element shall be removed or disfigured unless specifically indicated, specified, or directed by the Architect.

1.03 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. Samples for Initial Selection: For coating system.
- C. Samples for Verification: For each type of wood flooring and accessory, with stain color and finish required, approximately 12 inches long and of same thickness and material indicated for the Work and showing the full range of normal color and sheen expected.
- D. Samples for Verification: For finish coating system and in each color and gloss of topcoat indicated:
 - 1. Submit Samples on rigid backing, 8 inches square.
 - 2. Step coats on Samples to show each coat required for system.
 - 3. Label each coat of each Sample.
 - 4. Submit stain Samples on representative samples of actual wood substrates, 8 inches square or 8 inches long.
 - 5. Label each Sample for location and application area.
- E. Product List: For each product indicated, include the following:
 - 1. Cross-reference to finish system and locations of application areas. Use same designations indicated on Drawings and in schedules.

1.04 QUALITY ASSURANCE

- A. Protection of Site and Historic Properties
 - 1. All work shall be performed in accordance with the "Secretary of the Interior's Standards for Rehabilitation, "U.S. Department of the Interior, National Park Service, 1995." They can be found at http://www.nps.gov/hps/tps/standguide/rehab/rehab_standards.htm
- B. Provide permanent heating and air conditioning, installed and working, in rooms where wood flooring is to be installed or adequate arrangements for ventilation and temperature controls. The temperature shall be maintained at 55 to 80 degrees F and the humidity shall be maintained at 40 percent starting not less than 3 days prior to beginning the installation of flooring and continuing throughout the remainder of the contract period.
- C. Contractor shall have minimum 5 years documented experience installing and finishing wood strip flooring.
- D. All equipment shall be commercial grade and well maintained.
- E. Mockups: Provide separate sample mockups representing the techniques that will be used to duplicated the wood repair and refinish In order to evaluate and set the standard of quality for that work. A minimum of one mockup showing repair and refinishing are required for evaluation.

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1. Provide required sheen, and technique on each surface.
2. Obtain Architect's acceptance of visual qualities prior to commencing work that individual mock-up is intended to represent.
3. Protect and maintain approved mock-ups throughout the work of the Contract.

1.05 SCHEDULING

- A. Flooring work shall be scheduled after completion of any other work which would raise the moisture content of the flooring or damage the finished surface of the flooring.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Materials: Unlisted manufacturers must be submitted to Architect for approval prior to use on samples or on site.
1. New wood flooring: Match existing wood including species, grain characteristics, size and thickness.
 2. Stain: Bona US / Bonakemi USA (oil-base)
 3. Clear Finish: Bona US / Bonakemi USA, Traffic Commercial Grade (latex).
 4. Comparable Products: Comparable products of other manufacturers shall meet or exceed specification requirements for the "Basis of Design" product.
 - a. Hillyard
 - b. Sherwin Williams Co.
 - c. Synteko Floor Finishes
- B. Material Quality: Provide manufacturer's best-quality finish material as specified. Finish-material containers not displaying manufacturer's product identification will not be acceptable for use.
- C. Material Compatibility: Provide stain and finish/top coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine areas and conditions under which repair and finishing will be performed for compliance with finish application requirements specified herein. Do not begin work until unsatisfactory conditions have been corrected.
- B. If hardware, plates or machined surfaces are an obstruction to the restoration work, coordinate with the General Contractor to have these items removed prior to beginning work. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and finishing work.

3.02 PREPARATION

- A. Prior to beginning work, seal off room/area from the rest of the building, using 2 layers of 6 mil polyethylene sheeting. Ensure that masking tape will not damage adjacent surfaces.
- B. Protect adjacent surfaces from contact with chemicals and tools.
1. Mask off adjacent floor, wall and trim surfaces with 2 layers of 6 mil polyethylene clear sheeting.
 2. Attach plastic to adjacent surfaces using masking tape for the initial attachment, followed by 3-inch-wide aluminum foil tape. Foil tape should cover the masking tape entirely and attach itself to the plastic sheeting and the adjacent surface. Where the adjacent surface is dirty or dusty, remove loose material by vacuum, followed by a warm water wash. Allow to dry and install masking.
 3. Carefully mask off fixtures that are not to be removed and are not to be treated. Ensure that masking materials protect masked elements from machines and chemicals.

4. Safeguard the building's lighting fixtures, floors, and equipment from damage caused by moving materials and equipment into and out of the work area.
- C. The wood flooring restoration Contractor is responsible for damage to existing flooring and adjacent surfaces as a result of his work. Correct damage by cleaning, repairing or replacing, and refinishing, as acceptable to the Architect.
- D. Cleaning: Before applying finish or other surface treatment, clean substrates of substances that could impair the bond of the coatings. Remove oil and grease before cleaning.
- E. Surface Preparation: Clean and prepare surfaces to be finished according to manufacturer's written instructions for each particular substrate condition.
- F. Materials Preparation: Mix and prepare finish materials according to manufacturer's written instructions.

3.03 REPLACEMENT OF WOOD FLOOR

- A. Replace the wood floor where needed with matching wood, of matching grain pattern and of matching length and width as existing boards.
 1. Strip substrate of old adhesive and provide clean smooth surface for setting new wood.
 2. Use filler to repair or feather substrate as needed to permit top of new wood flooring surface to be flush with the existing flooring to remain.
 3. New wood floor shall be set to provide smooth to existing wood field.
 4. Attach new wood floor to the substrate by nailing.

3.04 REMOVAL OF EXISTING FINISH

- A. Sand wood surfaces thoroughly with aluminum oxide sand paper. Begin with 60 grit, and graduate to an ever finer grit as required to remove and smooth surface. Wood flooring must be sanded with the wood grain. No orbital sanding permitted and no abrasion marks will be accepted.
- B. Sand edges and corners with 80-100 grit to remove finish and graduate to an ever finer grit as required to remove existing finish.
- C. After sanding, buff wood floors with a sanding screen, 100-180 grit.

3.05 PREPARATION FOR NEW FINISH

- A. Identify excessively loose boards and review methods of securing these with the Architect prior to work.
- B. Identify holes or divots that require filling and recommend the appropriate latex or epoxy filler for each condition. Review with the Architect prior to work.
- C. Secure loose boards and fill holes as agreed, prior to finishing work.
- D. Final clean wood floor with water solution to open grain prior to staining.

3.06 APPLICATION OF NEW FINISH

- A. Apply stain and clear finish according to manufacturer's written instructions. Use applicators and techniques best suited for substrate, type of material being applied, and room conditions.
 1. Do not finish over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable finish film. Ensure that room is dust-free.
 2. The term "exposed surfaces" includes areas visible when permanent or built-in items are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
 3. Finish surfaces behind movable equipment and furniture the same as similar exposed surfaces.
 4. The completed coating finish must be uniform in appearance throughout and match the approved samples. No thin or inconsistent finished surfaces will be accepted.
- B. Scheduling Finishing: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for finishing as soon as practical after preparation and before subsequent surface deterioration.

1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer.
 2. If stain, or other conditions show inconsistent coloring of the wood surface, apply additional coats until finish color is uniform in color and appearance. Give special attention to ensure edges, corners, and crevices receive a dry film thickness equivalent to that of flat surfaces.
 3. Adjust the stain color on new wood to ensure a color match with existing wood.
 4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until finish has dried and received proper sanding.
- C. Minimum Coating Thickness: Apply finish materials no thinner than manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.
- D. Completed Work: Match approved samples for color, sheen, and coverage. Remove and refinish work not complying with requirements.
- E. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded finish materials from the site.
1. After completing finishing, clean finish-spattered surfaces. Remove spattered finish by washing or scraping. Be careful not to scratch or damage adjacent finished surfaces.

3.07 FINISH SYSTEM

- A. Apply the approved oil-based stain to wood to match the control sample. Apply the stain according to manufacturer's written instructions. Remove excess stain from the surface and allow to dry thoroughly.
- B. Adjust stain to ensure consistent color. Pay particular attention to the coloration of new wood adjacent to existing wood.
- C. Lightly sand and clean prior to applying topcoats.
- D. Apply Final Topcoats of Finish: Apply three (3) finish topcoats as specified.
1. Allow each coat to dry thoroughly prior to application of the next coat.

3.08 PROTECTION

- A. Protect work from traffic, whether being finished or not. Correct damage by cleaning, repairing or replacing, and refinishing, as approved by Architect.
- B. Upon completion, keep work area closed to traffic for not less than 24 hours after application unless manufacturer recommends a longer period. Provide "Wet Paint" signs outside the room to ensure that there is no foot traffic on the completed flooring surface.
- C. Remove temporary protective wrappings after completing finishing operation, punch-list and after curing is complete.

END OF SECTION

SECTION 09 01 90
PAINT REMOVAL ON HISTORIC BRICK MASONRY

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes the removal of paint coatings from historic exterior brick masonry surfaces in preparation for restoration work.
- B. The work shall preserve the historic masonry substrate, comply with the Secretary of the Interior's Standards for Rehabilitation, and avoid damage to the masonry.
- C. Removal shall be accomplished using non-abrasive, chemical-based methods appropriate for historic masonry.

1.02 REFERENCES AND STANDARDS

- A. Publications listed below shall be the most recent issue and will form a part of this Specification to extent referenced. Publications are referred to in text by designation only.
- B. Protection of Site and Historic Properties:
 - 1. All work shall be performed in accordance with the "Secretary of the Interior's Standards for Rehabilitation, "U.S. Department of the Interior, National Park Service, 1995." They can be found at http://www.cr.nps.gov/local-law/arch_stnds_0.htm
 - 2. Preservation Brief 1: Assessing Cleaning and Water-Repellent Treatments for Historic Masonry Buildings.

1.03 ACTION SUBMITTALS

- A. Product Data: For each product proposed, including chemical composition, application instructions, and data demonstrating suitability for historic masonry.
- B. Samples: On-site test panels at least 4 sq. ft. for each distinct masonry condition, showing the proposed method and results.
- C. Method Statement: Step-by-step description of procedures, protection of adjacent materials, and disposal of removed paint and chemicals.

1.04 QUALITY ASSURANCE

- A. Paint Removal Specialist Qualifications: Work must be performed by a firm having not less than five (5) years of regularly engaged, successful experience in historic treatments similar in nature, materials, design, and extent to this work on at least three (3) buildings listed, or eligible to be listed, in the National Register of Historic Places under the review of federal and/or state historic preservation agencies in the last five (5) years and employing personnel skilled the processes and operations indicated.
 - 1. Field Supervisor Qualifications: Full-time supervisors experienced in historic treatment work similar in nature, material, design, and extent to that indicated for this Project. Supervisors shall be on Project site during times that paint removal work is in progress.
 - 2. Worker Qualification: Persons who are experienced in historic treatment work of types they will be performing.
- B. Paint-Remover Manufacturer Qualifications: A firm regularly engaged in producing paint removers that have been used for similar historic painting applications with successful results, and with factory-trained representatives who are available for consultation and Project-site inspection and assistance at no additional cost.
- C. Field Supervision: Require restoration specialist firms to maintain an experienced full-time supervisor on the Project site during times that paint removal is in progress.
- D. Products shall be of the quality as specified and produced by listed manufacturer. Products of equal or better quality of other manufacturers will be considered for use.

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- E. Work of this section shall comply with applicable standards indicated.
- F. Manufacturer's Instructions: In addition to requirements of these specifications, comply with manufacturer's instructions and recommendations for all phases of work including preparation of substrate, application of materials, and protection of installed material.

1.05 DELIVERY AND STORAGE

- A. Store all materials off the ground, under cover, in a dry location, and comply with recommendations by the manufacturer.

1.06 PROJECT CONDITIONS

- A. Weather Conditions: Do not proceed with work during inclement weather or forecast of inclement weather, or when temperature is above or below manufacturer's recommended limitations for installation.
- B. Cover air intakes, air conditioning vents, and similar openings that may come in contact with the chemical cleaners, residues, and their fumes. Leave covers in place throughout the paint removal process.
- C. Take appropriate precautions to avoid harm to building occupants, pedestrians and nearby property. Terminate work when wind drift may injure passersby or damage vehicles and adjacent property.
- D. Provide temporary containment and comply with EPA, state, and local environmental regulations regarding lead-based paint, if applicable.
- E. Contractor shall be responsible for the repair of all damage to adjacent materials due to the execution of the paint removal work at no additional expense to the Client. Repairs shall be made by qualified personnel, skilled in the type of repairs required, to the satisfaction of the Architect.
- F. Protect adjacent areas and surfaces not being worked on.
- G. Protect trees, plants, foliage, storm sewers, and surrounding surfaces from chemicals, residue, and rinse waters.
- H. Maintain protection in-place until completion of Work.

1.07 SEQUENCING AND SCHEDULING

- A. Order replacement materials at the earliest possible date, to avoid delaying completion of the Work.
- B. Provide a sequencing plan to the Architect for approval prior to beginning work.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Proprietary Chemicals: (one of the following, or approved equal).
 - 1. ProSoCo, Inc. <http://www.prosoco.com/>
 - 2. Diedrich Technologies, Inc. <http://www.diedrichtechnologies.com/>
 - 3. Dumond Chemicals, Inc. <http://www.dumondchemicals.com/>

2.02 MATERIALS

- A. Paint Removal Products: Basis of Design (Prosoco products)
 - 1. Enviro Klean® Safety Peel 1 – for multi-layered, acrylic, or oil-based coatings, where a paste and paper system is appropriate.
 - 2. Sure Klean® Heavy Duty Paint Stripper – for removal of most acrylic, oil-based, and latex coatings where a liquid gel application is suitable.
 - 3. Sure Klean® Paint Stripper Gel – for more controlled application on vertical masonry surfaces.
- B. Neutralizing Agent: As recommended by manufacturer to neutralize pH after chemical application if required.
- C. Water: Clean, potable water, free of contaminants.
- D. Other Materials: Poly sheeting, protective coverings, and waste disposal containers.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Inspect surfaces to determine condition of masonry and type of paint.
- B. Identify areas of spalled, cracked, or deteriorated masonry; repair before proceeding.
- C. Test for moisture infiltration and efflorescence prior to removal..

3.02 PREPARATION

- A. Protect all adjacent surfaces, glazing, metalwork, and plantings from chemicals and runoff.
- B. Provide ground and storm drain protection in compliance with environmental regulations.
- C. Wet surrounding masonry to prevent absorption of chemicals beyond target areas if recommended by manufacturer..

3.03 TEST PANELS

- A. Conduct removal on test panels as directed, using approved products and methods.
- B. Allow test panels to dry fully before evaluation.
- C. Obtain written approval of test panel results prior to proceeding with full-scale removal.

3.04 APPLICATION

- A. Follow manufacturer's written instructions and approved mock-up procedure.
- B. Apply chemical stripper uniformly, to manufacturer-recommended thickness and dwell time.
- C. Monitor progress to avoid overexposure and damage to masonry.
- D. Remove softened coatings with non-metallic scrapers, brushes, or low-pressure water rinse (maximum 400 psi at nozzle).
- E. Repeat process as needed to achieve removal, but do not exceed maximum number of applications approved in mock-up.

3.05 CLEANING

- A. Rinse thoroughly with clean water to remove all chemical residue.
- B. Neutralize substrate if required by manufacturer.
- C. Allow surfaces to dry completely; verify no chemical residue or whitening before further work.

3.06 PROTECTION

- A. Protect cleaned surfaces from contamination and damage until final acceptance.
- B. Dispose of all paint debris and chemical residues in accordance with EPA and local hazardous materials regulations.

END OF SECTION

SECTION 09 29 00
GYPSUM BOARD

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes: Interior gypsum board faced walls and partitions, and supplementary items necessary for installation as follows.
 - 1. Drywall trim and finishing (joint tape and compound treatment).
 - 2. Acoustical treatment within partitions as scheduled on drawings.
 - 3. Special requirements for acoustical wall construction.
 - 4. Skim coat for painted walls and ceilings indicated to receive Level 5 finish.
- B. Related Sections:
 - 1. Section 06 10 00 – Rough Carpentry: Wall framing and furring
 - 2. Section 09 91 00 – Painting: Paint coatings on gypsum board.

1.02 DEFINITIONS

- A. Gypsum Board Construction Terminology: Refer to ASTM C 11 for definitions of terms not defined in this Section or in other referenced quality standards.
- B. Damage: Stored or installed paper faced gypsum board materials not specifically manufactured as “moisture-resistant products” shall be classified as defective and nonconforming Work if they have been exposed to wetness or dampness at any time prior to Substantial Completion or if they exhibit evidence of active or dormant mold or mildew.

1.03 REFERENCE STANDARDS

- A. In addition to requirements shown or specified, comply with applicable provisions of following for design, materials, fabrication, and installation of component parts:
 - 1. GA 216 – Application and Finishing of Gypsum Board by Gypsum Association.
 - 2. GA 214 – Recommended Levels of Gypsum Board Finish by Gypsum Association.
 - 3. GA 600 – Fire Resistance Design Manual by Gypsum Association

1.04 ACTION SUBMITTALS

- A. Prepare the following submittals per requirements of Section 01 33 00 – Submittal Procedures.
- B. Product Data: Manufacturer's technical literature for each product and system indicated.
 - 1. Include manufacturer's specifications for materials, finishes, construction details, installation instructions, and recommendations for maintenance.

1.05 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: Written reports based on evaluation of comprehensive tests performed by qualified testing agency indicating that each product complies with requirements.
- B. Field Quality Control Reports: Written report of testing and inspection required by “Field Quality Control”.
- C. Manufacturer's Project Acceptance Document: Certification by the manufacturer that its product(s) are approved, acceptable, suitable for use in specific locations, for specific details, and for applications indicated, specified, or required.
- D. Qualification Data:
 - 1. For manufacturer and installer.
 - 2. For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Architects and Owners, and other information specified.

3. Architect may waive Submittal of Qualification Data for Manufacturers listed in this Section.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer with not less than 5 years' experience with successful production of products and systems similar to scope of this Project, with a record of successful in-service performance and completion of projects for a period of not less than 5 years, and with sufficient production capability, facilities and personnel, to produce required Work.
 1. Source Limitations: Provide gypsum products manufactured within the United States from materials free of sulfur, formaldehyde or other deleterious chemicals. Natural gypsum ore shall be mined in North America. Synthetic (Byproduct) gypsum shall be pure calcium sulfate from domestic sources.
- B. Installer Qualifications:
 1. Experience: Installer with not less than 5 years' experience in performing specified Work similar to scope of this Project, with a record of successful in-service performance and completion of projects for a period of not less than 5 years and with sufficient production capability, facilities, and personnel to produce required Work.
 2. Supervision: Installer shall maintain a competent supervisor who is at Project site during times specified Work is in progress that is experienced in installing systems similar to type and scope required for Project.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Reference: Gypsum Association GA-801: Handling and Storage of Gypsum Products.
- B. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.
- C. Store materials inside under cover and in manner to keep them dry, protected from weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes. Neatly stack gypsum boards flat to prevent sagging.
- D. Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal corner beads and other trim from being bent or damaged.
- E. Protect gypsum board panels to prevent damage to edges, ends, and surfaces.

1.08 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with requirements of ASTM C840 or recommendations of gypsum board manufacturer whichever more stringent, for environmental conditions before, during and after application of gypsum board.
- B. Room Temperatures: For non-adhesive attachment of gypsum board to framing, maintain not less than 40 degrees F. Do not exceed 95 degrees F when using temporary heat sources.
- C. Ventilation: Ventilate building spaces as required to remove water in excess of that required for drying of joint treatment material immediately after its application. Avoid drafts during dry, hot weather to prevent finishing materials from drying too rapidly.
- D. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.
 1. If Contractor chooses to install gypsum panels before areas are enclosed and conditioned, he does so entirely at his own risk. Damaged panels shall be removed and new panels installed at Contractor's expense and will not be deemed cause for additional time.
- E. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.
- F. Provide adequate lighting and ventilation during installation and joint finishing treatment.

1.09 COORDINATION

- A. Coordinate installation of products and systems with interfacing and adjoining construction to provide a successful installation without failure.

PART 2 – PRODUCTS

2.01 MANUFACTURERS AND PRODUCTS

- A. Manufacturers and Products: Subject to compliance with requirements of Contract Documents as judged by the Architect, manufacturers offering products that may be incorporated into the Work include those listed under gypsum board products:
- B. Basis of Design (Product Standard): Contract Documents are based on products and systems specified to establish a standard of quality. Provide products from one of the named manufacturers below.
 - 1. Manufacturers:
 - a. United States Gypsum Company (USG)
 - b. National Gypsum Company, LLC
 - c. CertainTeed Gypsum Corp
 - d. Georgia-Pacific Gypsum
- C. Single Source Responsibility: Furnish each type of product from single manufacturer. Provide secondary materials only as recommended by manufacturer of primary materials.

2.02 GYPSUM BOARD PRODUCTS

- A. Sizes: Maximum lengths and widths available that will minimize short edge-to-short edge butt joints and to correspond to support system indicated.
- B. Typical Paper-Faced Gypsum Board Products:
 - 1. Paper-Faced Type X Gypsum Board:
 - a. Material Quality Standard: ASTM C 1396 / C 1396M, Type X.
 - b. Description: Noncombustible fire-resistant gypsum core with paper surfacing on face, back, and long edges; tapered long edges; 5/8 in. thick.
 - c. Manufacturers and Products:
 - 1) United States Gypsum Company (USG); Sheetrock Firecode X Gypsum Panels, or Sheetrock Brand EcoSmart Firecode X Panels.
 - 2) National Gypsum Company, LLC; Gold Bond Fire-Shield Gypsum board.
 - 3) CertainTeed Corporation; Type X Drywall Panel.
 - 4) Georgia-Pacific Gypsum LLC; ToughRock Fireguard X Gypsum Board.
- C. Moisture-Resistant Gypsum Board Products:
 - 1. Moisture-Resistant Paper-Faced Gypsum Board:
 - a. Material Quality Standard: ASTM C 1396 / C 1396M, Type X.
 - b. Description: Enhanced moisture-resistant, noncombustible gypsum core, with moisture-resistant paper surfacing on face, back and long edges; tapered long edges; score of 10 according to ASTM D 3273; 5/8 in. thick.
 - c. Manufacturers and Products:
 - 1) United States Gypsum Company (USG); Sheetrock Brand Glass-Mat Mold Tough AR Firecode X Gypsum Panels or Sheetrock Brand EcoSmart Mold Tough Firecode X Panels.
 - 2) National Gypsum Company; Gold Bond XP Gypsum Board.
 - 3) CertainTeed Corporation; ProRoc Moisture and Mold Resistant Type X Gypsum Board.
 - 4) Georgia-Pacific Gypsum LLC; ToughRock Fireguard X Mold-Guard Gypsum Board.

2.03 TRIM ACCESSORIES

- A. Paper Faced Metal Trim: Trim members conforming with ASTM C 1047 is required. Provide galvanized steel laminated with paper trim designed for concealed metal and for application without mechanical fastening, unless otherwise specified; sizes compatible with thickness of drywall.
- B. Typical Drywall Trim Accessories:
 - 1. Material Quality Standard: ASTM C 1047.
 - 2. Description: Trim profile fabricated of paper-faced galvanized or aluminum-coated steel sheet; of required size for gypsum board thickness.
 - 3. Manufacturers:
 - a. United States Gypsum Company (USG)
 - b. Phillips Manufacturing.
 - c. ClarkDietrich Industries, Inc.
 - 4. Trim Products:
 - a. Cornerbead:
 - 1) Purpose: For protecting outside (external) and inside corners.
 - 2) Basis of Design: ClarkDietrich Paper-Faced Corner Bead and Paper-Faced Inside Corner Bead.
 - b. L-Trim:
 - 1) Purpose: For protecting exposed edges of gypsum board where gypsum board terminates.
 - 2) Basis of Design: ClarkDietrich Paper-Faced L-Trim.
 - c. Control Joint:
 - 1) Description: One-piece trim formed with V-shaped slot, with removable strip covering slot opening.
 - 2) Purpose: For conditions requiring expansion and contraction stresses of large areas of gypsum board to be relieved.
 - 3) Basis of Design: ClarkDietrich 093 Zinc Control Joint.
 - a) ClarkDietrich FAS-093X Fire Rated Control Joint where required.

2.04 FASTENERS

- A. Limitations: Nails and staples are not permitted.
- B. Gypsum Board Screws:
 - 1. Screw Fasteners: Conforming to ASTM C1002 and C954, self-embedding bugle head and corrosion resistant coating, and as instructed by gypsum board manufacturer.
 - a. Wood Framing: Type "W" bugle head
 - 2. Product Description - Standard Applications: Bugle head, self-drilling, self-tapping, steel screws with Phillips-head recess of size, holding power, and other properties recommended by respective gypsum board manufacturer; minimum 5/8 inch penetration into supporting construction.
 - 3. Product Description - High Moisture / Humidity Applications: Bugle head, self-drilling, self-tapping, stainless steel screws with Phillips-head recess of size, holding power, and other properties recommended by respective gypsum board manufacturer; for use at high moisture areas.
- C. Miscellaneous Fasteners: For conditions not indicated, fasteners shall be type, finish, size, and holding power recommended by respective gypsum board manufacturer and conditions.

2.05 JOINT TREATMENT MATERIALS

- A. Joint Compound: ASTM C475, board manufacturer's standard ready-mixed, low-VOC joint compounds with no detectable amounts of crystalline silica based on NIOSH Method 7500.
- B. Joint Tape:

1. Interior Gypsum Wallboard: Paper.
- C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
 1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
 3. Fill Coat: For second coat, use setting-type, sandable topping compound.
 4. Finish Coat: For third coat, use drying-type, all-purpose joint compound.
 5. Skim Coat: For final coat of Level 5 finish, use drying-type, all-purpose joint compound.
- D. Setting Type Joint Compound for Gypsum Board: Factory-packaged, job-mixed, chemical-hardening powder products formulated for uses indicated.
 1. Where setting-type joint compounds are indicated as a taping compound only or for taping and filling only, use formulation that is compatible with other joint compounds applied over it.
 2. For pre-filling gypsum board joints, use formulation recommended by gypsum board manufacturer.
 3. For topping compound, use sandable formulation.
- E. Drying-Type Joint Compounds: Factory-prepackaged vinyl-based products complying with the following requirements for formulation and intended use.
 1. Ready-Mix Formulation: Factory-premixed product.
 2. Taping compound formulated for embedding tape and for first coat over fasteners and flanges of corner beads and edge trim.
 3. Topping compound formulated for fill (second) and finish (third) coats.
 4. Lightweight Joint Compound: Specifically formulated to reduce airborne dust while sanding.
 - a. Basis of Design: ProForm Lite Ready Mix Joint Compound with Dust-Tech as manufactured by National Gypsum, or equal products of the other named manufacturers.

2.06 SOUND ATTENUATION INSULATION

- A. Sound Attenuation Batts: Glass or other inorganic fibers and resinous binders formed into flexible batts or blankets, complying with ASTM C665, Type I unfaced, manufacturer's standard sizes, thickness as indicated; lengths and widths required to interface with size of space insulated, maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, passing ASTM E 136 for combustion characteristics; and of the following nominal density and thermal resistivity:
- B. Fiberglass Sound Attenuation Blankets:
 1. Material Quality Standard: ASTM C 665, Type I.
 2. Description: Unfaced blankets produced by bonding inorganic glass fibers with a thermosetting binder.
 3. Surface Burning Characteristics: According to ASTM E 84/NFPA 255/UL 723:
 - a. Flame Spread: Class A no greater than 25.
 - b. Smoke Developed: No greater than 50.
 4. Thickness: Not less than 2-1/2 in (62 mm), unless otherwise indicated.
 5. Manufacturers and Products:
 - a. CertainTeed Corporation; CertaPro AcoustaTherm Batts.
 - b. Johns Manville Building Insulation Div.; Sound Control Batts.
 - c. Knauf Fiber Glass; QuietTherm.
 - d. Owens Corning; Sound Attenuation Batts.

2.07 RELATED MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

- C. Acoustical Joint Sealant: At acoustically rated assemblies, comply Section 07 92 00, "Acoustical Joint Sealants."
- D. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine substrates to receive products and systems and associated work for compliance with requirements and other conditions affecting performance. Proceed only when unsatisfactory conditions have been corrected in a manner complying with Contract Documents. Starting work within a particular area will be construed as acceptance of surface conditions.
 - 1. Verify rough-in utilities and blocking is in proper position.
- B. Do not proceed with installation until deficiencies are corrected and surfaces to receive gypsum board are acceptable.
- C. Protrusions of framing, twisted framing members, or unaligned members must be repaired before installation of gypsum board is started.

3.02 PREPARATION

- A. General: Comply with manufacturer's instructions, recommendations and specifications for cleaning and surface preparation. Surfaces shall have no defects, contaminants, or errors which would result in poor or potentially defective installation or would cause latent defects in Work.
- B. Items Which Require Backer Plates or Blocking: Coordinate sizes and locations.
 - 1. Blocking: Coordinate with Section 06 10 00 for installation of concealed wood blocking and furring required for securing wood trim, carpentry, woodwork, cabinets, millwork, casework, surface mounted equipment, and similar nail-fastened items.
 - 2. Install additional studs for attachment of backer plates and blocking in required locations to receive surface mounted accessories as indicated or as required by accessory manufacturer.
 - 3. Direct attachment of items to studs is not permitted.

3.03 INSTALLATION – ACOUSTICAL INSULATION

- A. Do not install sound attenuation blankets until mechanical and electrical work within framing spaces is complete.
- B. Install sound attenuation blanket in contact with one face of partitions scheduled to receive sound insulation. Install insulation with daubs of adhesive applied to back of gypsum board or with adhesive applied to edge of studs to maintain full coverage and prevent slumping at tops of partitions and other displacement.. Sound insulated partitions shall be constructed, insulated and caulked. Do not locate outlets, switches or similar items on opposing sides of partition within same stud space.
- C. Fit sound attenuation blankets tight around cut openings and penetrations, and behind and around electrical and mechanical items within framing spaces. Pack blankets around door and window frames, between jamb studs, in boxed headers, and in other voids.

3.04 INSTALLING ACOUSTICAL SEALANTS

- A. Comply with ASTM C919 and manufacturer's recommendations for location of acoustical sealant beads, and close off sound-flanking paths around or through the work, including sealing of partitions above acoustical ceilings.
- B. Provide continuous bead of sealant under bottom edge of gypsum board and wall cut outs, at toilet room partitions and other partitions receiving sound insulation so as to completely seal wall against sound leaks.
- C. Apply 3/8 inch continuous bead of acoustical sealant to face of runner tracks before applying gypsum boards; completely seal wall against sound leaks.
- D. Where sound attenuation blankets are installed in partitions, seal perimeters, control and expansion joints, openings, and penetrations with continuous beads of acoustical sealant at both faces of partition.

1. Apply acoustical seals to electrical boxes and other penetrations of gypsum board.
- E. Do not allow acoustical sealant to remain exposed to air for more than 15 minutes before panel is applied.
- F. Completely seal around perimeter of and penetrations through sound walls, including intersections with walls, columns, and other adjacent construction; fill depth of gaps around gypsum panels at floor, structure above, door frames, and other openings; and at cutouts for electrical boxes, pipes and plumbing, and other penetrations. Cut panels accurately to fit penetrations. Caulk openings in non-fire rated partitions with acoustical sealant.

3.05 REPAIR WORK AT EXISTING GYPSUM BOARD SYSTEMS

- A. Prepare all openings indicated on drawings to be removed in existing work to permit access for new work.
- B. Cut back existing gypsum board to rectangular shape for opening to the nearest stud or blocking. Provide supplementary framing to support edges of gypsum board on all sides of openings.
- C. Remove all existing trim pieces, tape and joint filler that will interface with providing a smooth surface in the new work.
- D. Infill openings with stud framing where the opening size exceeds the stud spacing established elsewhere in this section. Set new studs so as to allow the finished face of the new gypsum board to be flush and even with the existing. For ceiling assemblies, provide additional framing to support new gypsum board infill.
- E. Install and finish new gypsum board to be smooth and flush with existing work, such that infill will be unnoticeable in finished condition.
- F. On walls which are decorated with vinyl wall covering, peel back covering to allow for gypsum board patching. Re-apply covering at completion of gypsum board work.
- G. After taping and finishing has been completed, and before decoration, repair all damaged and defective work, including nondecorated surfaces.
- H. Patch holes or openings 1/2 inch or less in diameter, or equivalent size, with a setting type finishing compound or patching plaster.
- I. Repair holes or openings over 1/2 inch diameter, or equivalent size, with 5/8 inch thick gypsum board secured in such a manner as to provide solid substrate equivalent to undamaged surface.
- J. Tape and refinish scratched, abraded or damaged finish surfaces including cracks and joints in non-decorated surface to provide continuity of surface and such that defect is not visible when painted is completed.

3.06 INSTALLATION, GENERAL

- A. Installation Quality Standards: In addition to standards listed elsewhere, perform Work according to following, unless otherwise specified:
 1. United States Gypsum Company (USG); Gypsum Construction Handbook, if no other installation quality standard applies to condition.
 2. Respective Manufacturer's written installation instructions.
 3. Accepted submittals.
 4. Contract Documents.
 5. Gypsum Association GA 216.
- B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by isolating metals and other materials from direct contact with incompatible materials.

3.07 INSTALLATION OF GYPSUM BOARD ASSEMBLIES

- A. Gypsum Board Installation Requirements: Comply with ASTM C840.
 1. Do not proceed with gypsum board installation until blocking, framing, bracing, and other supports for subsequently applied work have been reviewed, installed, and accepted by the Architect.
 2. Do not install gypsum board until thermal and acoustical insulation, membrane vapor barriers, and other work concealed by gypsum board have been installed.

- B. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members or provide control joints to counteract wood shrinkage.
- C. Isolation from Building Structure: Isolate gypsum board assemblies from building structure to prevent transfer of loading imposed by structural movement.
 - 1. Provide isolation joints as indicated or required by installation quality standards.
 - 2. Isolate ceiling assemblies abutting or penetrated by building structure.
 - 3. Isolate partition framing and wall furring abutting or penetrated by building structure, except at floor.
- D. Supplemental Accessories: Install supplementary framing, blocking, reinforcing, and bracing in gypsum board assemblies to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, hand rails, furnishings, or similar construction. Comply with details indicated and recommendations of installation quality standards or manufacturer.

3.08 INSTALLING GYPSUM BOARD PRODUCTS

- A. General Requirements:
 - 1. Install type of gypsum board at location indicated by gypsum board schedule at end of this Section.
 - 2. Do not install damaged gypsum boards.
 - 3. Install gypsum boards with finish face side out.
 - 4. Butt gypsum boards together for a light contact at edges and ends with not more than 1/16 in (1.5 mm) of open space between panels.
 - 5. Do not force gypsum boards into place.
 - 6. Do not place tapered edges against cut edges or ends.
- B. Isolation from Building Structure and Window and Door Frames:
 - 1. Apply edge trim where gypsum board abuts dissimilar materials.
 - 2. Provide 1/4 in to 1/2 in (6 mm in 12 mm) wide spaces at these locations and trim edges with edge trim where edges of gypsum boards are exposed.
 - 3. Seal interior joints between edge trim and abutting structural surfaces with acoustical sealant.
- C. Single-Layer Board Assemblies:
 - 1. At typical conditions, install gypsum board vertically (long dimension parallel to framing), to minimize short end-to-short end joints unless otherwise indicated or required by assembly fire test reports.
- D. Typical Wall Applications:
 - 1. Attach gypsum boards to studs so that leading edge or end of each board is attached to open (unsupported) edges of stud flanges first.
 - 2. Stagger vertical joints on opposite sides of partitions.
 - 3. Do not make joints other than control joints at corners of framed openings.
 - 4. Attach gypsum boards to framing provided at doors, windows, other openings and cutouts. Avoid gypsum board joints within 12 in. of the corners of these openings.
 - 5. Cut gypsum board to allow for a minimum 1/4 in. gap between gypsum board and floor to prevent potential wicking of moisture.
 - 6. Cover both faces of framing with gypsum boards as indicated, except in chase walls that are braced internally.
 - 7. Cut and fit gypsum boards around ducts, pipes, conduits, and other penetrations to form proper annular joint to receive firestopping.
 - 8. Where partitions intersect open building structure members projecting below underside of floor slabs and roof decks, cut to fit profile formed by coffers, joists, beams, and other structural members; form proper annular joint to receive firestopping.
 - 9. Support both edge and end joints of gypsum boards over framing.
- E. Screw Attachments:
 - 1. Attach gypsum board to framing with screw fasteners of type appropriate for gypsum board materials and installation conditions:

- a. Length shall be as required by condition and penetrating framing not less than 1-1/4 inch in wood framing.
 - b. Spacing shall be as recommended by installation quality standard, gypsum board manufacturer, or respective assembly test report.
 - c. Use properly adjusted, positive-clutch electric power tool equipped with adjustable screw-depth head and a Phillips bit. Nails and staples are not permitted for attachment.
2. Drive screws to slightly dimple surface without breaking face paper, fracturing core, or stripping framing member around screw shank.
3. Start field screwing near center and work towards edges.
4. Space screws not less than 3/8 in (10 mm) from gypsum boards edges.
- F. Sound Attenuation Blankets: Install blankets within stud cavities set so that they are held in place by friction with studs; ensure blankets are secure within cavity and will not become displaced when second gypsum board side is closed.
- G. Sealant:
 1. Seal wall assemblies at perimeters, behind control joints, and at openings and penetrations with a continuous bead of sealant material according to following:
 - a. Water Resistance Sealant: Joints within non-fire resistance rated assemblies exposed to possible water infiltration.

3.09 INSTALLING TRIM ACCESSORIES

- A. Attach trim according to manufacturer's written instructions.
- B. Control Joints: Install control joints according to ASTM C 840.
 1. Install double studs to create control joints, leave 1/2 inch separation between gypsum board panels for installation of control joint units.
 3. Routing gypsum board to create joint is not acceptable.
- C. Interior Trim:
 1. Cornerbead: Use at outside corners unless otherwise indicated.
 2. LC-Bead: Use at exposed panel edges.
 3. Curved-Edge Cornerbead: Use at curved openings.
- D. Exterior Corner Trim:
 1. Cornerbead: Use at outside corners.
 2. LC-Bead: Use at exposed panel edges.
- E. Cornerbead: Install in single pieces at vertical corners.
- F. Edge Trim: Install where edge of gypsum board would otherwise be exposed or semi-exposed.
 1. Install trim in a single piece on each side of opening perimeters with joints only at corners. If size of opening exceeds available length of edge trim, coordinate locations of joints with Architect.
- G. Reveals: Install trim plumb, level, accurately aligned, and fitted neatly with hairline joints.
 1. Cut trim with sharp power saw and file cut edges to remove burrs.
 2. Miter joint at changes in direction or plane, except that inside corners may be coped.
 3. Apply masking tape or other protection to reveal surfaces before starting drywall finishing to keep surfaces clean and free of finishing compound and other substances.
 4. Routing gypsum board to create reveal is not acceptable.

3.10 FINISHING GYPSUM BOARD PRODUCTS

- A. General: Treat board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare surfaces for decoration.
- B. Joint Tape: Finish joints according to following:
 1. Typical Paper-Faced Gypsum Board: Paper.
 2. Moisture-Resistant Paper-Faced Gypsum Board: Mesh tape.

- C. Finishing: Finish boards and units to achieve specified level of finish as indicated in schedule at end of section.
 - 1. Typical Paper-Faced Gypsum Board: Either or combination of the following as recommended by manufacturer:
 - a. Setting-type joint compounds.
 - b. Drying-type joint compounds.
 - 2. Moisture-Resistant Paper-Faced Gypsum Board: Setting-type joint compounds.

3.11 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Manufacturer's qualified technical representative shall inspect first day's Work and periodically inspect Work to ensure installation is proceeding in accordance with manufacturer's designs, recommendations, and instructions. Representative shall submit written reports of each visit indicating observations, findings, and conclusions of inspection.

3.12 ADJUSTMENTS

- A. Damaged Materials: Stored or installed paper-faced gypsum board materials not specifically manufactured as "moisture-resistant products" shall be classified as damaged, defective, and nonconforming Work if they have been exposed to wetness or dampness at any time prior to Substantial Completion or if they exhibit evidence of active or dormant mold or mildew. Damaged materials and assemblies shall be replaced with new and dry materials and assemblies.

3.13 PROTECTION

- A. Procedures: Protect products and systems from damage during installation and remainder of construction period according to manufacturer's instructions.

3.14 GYPSUM BOARD SCHEDULE

- A. Gypsum Board Schedule, General: Install the designated gypsum board product based on exposure classification to water and / or moisture as indicated in "Board Types by Location" on the Drawings.

3.15 GYPSUM BOARD FINISHING SCHEDULE

- A. Gypsum Board Finishing Schedule, General: Finish panels to Levels of Finish indicated below. Apply joint tape over panel joints, except those with trim having flanges not intended for tape. Sand between coats and after last coat to produce a surface free of defects and ready for applied finish system.
- B. Preparation: Apply joint compound at open joints, panel edges, and damaged surface areas.
- C. Level 4 (Default condition): At following locations, embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges:
 - 1. Areas to receive paint with eggshell/satin sheen or light texture.
- D. Level 5: At following locations, embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges, and apply skim coat of joint compound or Level 5 Primer and Surfacers over entire surface:
 - 1. Areas as indicated on the Drawings.

END OF SECTION

SECTION 09 30 13
TILING

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes tile work for application to wall surfaces and including accessories, and related items necessary to complete the Work indicated.
 - 1. Porcelain wall tile
 - 2. Cove base
 - 3. Waterproofing membranes
 - 4. Setting bed, grout, and accessories for complete installation.
- B. Related Sections include the following:
 - 1. Section 09 29 00 – Gypsum Board for cementitious backer units installed as part of gypsum wallboard systems.

1.02 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. A108.1 - Ceramic Tile Installed with Portland Cement Mortar.
 - 2. A108.5 - Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar.
 - 3. A108.6 - Installation of Ceramic Tile with Chemical-Resistant, Water Cleanable Tile-Setting and Grouting Epoxy.
 - 4. A108/A118/A136 – Specification for the Installation of Ceramic Tile.
 - 5. A108.13 - Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone.
 - 6. A118.3 - Chemical Resistant Water Cleanable Tile-Setting and Grouting Epoxy.
 - 7. A118.4 - Latex-Portland Cement Mortar.
 - 8. A118.10 - Standard for Load Bearing, Bonded, Waterproof Membranes for Thin-set Ceramic Tile and Dimension Stone Installation.
 - 9. A137.1 – Specifications for Ceramic Tile
- B. American Society for Testing and Materials (ASTM):
 - 1. C144 - Aggregate for Masonry Mortar.
 - 2. C150 - Portland Cement.
 - 3. C206 - Finishing Hydrated Lime.
 - 4. C207 - Hydrated Lime for Masonry Purposes.
- C. Tile Council of North America (TCNA):
 - 1. Handbook of for Ceramic Tile Installation, current edition.

1.03 ACTION SUBMITTALS

- A. Prepare the following submittals per requirements of Section 01 33 00 – Submittal Procedures.
- B. Product data for each type of product specified.
- C. Shop drawings indicating tile patterns and locations and widths of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
 - 1. Locate precisely each joint and crack in tile substrates by measuring, record measurements on shop drawings, and coordinate them with tile joint locations, in consultation with Architect.
- D. Grout Samples for Initial Selection: Manufacturer's color charts consisting of actual sections of grout showing the full range of colors available for each type of grout indicated.

1.04 INFORMATIONAL SUBMITTALS

- A. Test Reports: Submit test reports from qualified independent testing laboratory indicating and interpreting test results relative to compliance of tile products with requirements specified for slip resistance.
- B. Maintenance Guide: Submit, in duplicate the tile manufacturer's maintenance instructions.
- C. Master Grade Certificates: Submit master grade certificates for each shipment, type, and composition of tile, signed by tile manufacturer and Installer.
- D. Product Certificates: Submit manufacturer's certifications for each type of grout and bonding material being provided suitable for the intended use and meet or exceed the referenced standards and the requirements of this Specification.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who has completed tile installations similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- B. Source Limitations for Tile: Obtain each color, grade, finish, type, composition, and variety of tile from one source with resources to provide products from the same production run for each contiguous area of consistent quality in appearance and physical properties without delaying the Work.
- C. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.
- D. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer for each product:
 - 1. Joint sealants.
 - 2. Backer units.
 - 3. Metal edge strips.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original sealed containers and as follows:
 - 1. Labels legible and intact identifying brand name and contents.
 - 2. Tile cartons grade-sealed by manufacturer in accordance with ANSI A137.1.
 - 3. Grade-seals unbroken.
 - 4. Manufactured mortars and grouts shall contain hallmarks certifying compliance with reference standards and are types recommended by tile manufacturer for application.
- B. Deliver manufactured mortar and grout materials in sealed, moisture proof containers.
- C. Store materials under cover in manner to prevent damage or contamination.

1.07 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.
- B. Provide minimum 28-day cure of concrete and concrete masonry units before the installation of the tile work.
- C. Ensure cement and plaster rendering has been applied to interior concrete masonry wall surfaces and has been reviewed by the installer for suitability to receive his mortar bedding materials prior to installation of the tile work.
- D. Maintain temperatures within range recommended by the mortar and grout manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C), in spaces during tile setting. After installation maintain temperatures within range recommended by the mortar and grout manufacturer.
- E. Shade all tile, materials and the work area from direct sunlight during the installation as needed to prevent rapid evaporation caused by excessive heat or wind.

1.08 EXTRA STOCK MATERIALS

- A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering and identified with labels describing contents.
 - 1. Tile and Trim Units: Furnish quantity of all full-size units equal to 2 percent of amount installed for each type, composition, color, pattern, and size indicated.
- B. Package each type of material separately, distinctly marked, and adequately protected against deterioration.

PART 2 – PRODUCTS

2.01 MANUFACTURERS AND PRODUCTS

- A. Acceptable Manufacturers and Products: Subject to compliance with requirements of Contract Documents as judged by the Architect, manufacturers/fabricators offering products that may be incorporated into the Work include but are not limited to those listed below.
- B. Tile basis of design products are indicated in the Schedule of Finishes on the drawings.

2.02 TILE PRODUCTS, GENERAL

- A. Manufactured tile shall conform with ANSI A137.1 with respect to abrasive wear, water absorption, bonding capability, thickness, facial dimensions, facial warpage, wedging, crazing, breaking strength and thermal shock.
 - 1. Provide tile complying with Standard grade requirements.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCA installation methods specified in tile installation schedules, and other requirements specified.
- C. Colors, Textures, and Patterns: Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures, patterns, and other appearance characteristics, provide specific products and materials complying with the following requirements:
 - 1. Provide Architect's selections from manufacturer's full range of colors, textures, and patterns for products of type indicated.
 - 2. Provide tile trim and accessories that match color and finish of adjoining flat tile.
- D. Include special shapes, including cove bases, bullnose edges, corners, etc., required to complete the work according to best trade practice for each job condition, whether or not such special shapes are specifically indicated or specified.
- E. Rectified Tile Edges: Provide all tile units having a face dimension of greater than 8" x 8" (200 x 200 mm) with factory rectified edges.

2.03 TILE MATERIALS

- A. Basis of Design: Tile:
 - 1. Refer to Schedule of Finishes on drawings.
- B. Basis of Design: Setting and Grouting Materials: Custom Building Products, Huntington Beach, CA
 - 1. Comparable Products: Subject to compliance with requirements, provide the "Basis of Design" product or a comparable product by one of the following:
 - a. Laticrete International, Inc., Bethany, CT
 - b. TEC Specialty Construction Brands/H.B. Fuller, Aurora, IL
 - c. Mapei Corp., Deerfield Beach, FL
- C. Ceramic Tile (CT): As scheduled on drawings and as follows, unless indicated otherwise:
 - 1. Composition: Vitreous or impervious natural clay or porcelain.
 - 2. Thickness: 1/4 inch.

The Grant Home Sites – Boyhood Home, Schoolhouse, and Tannery
Georgetown, Ohio

3. Face: Pattern of design indicated, with cushion edges.
4. Surface: Smooth.
5. Tile Color and Pattern: Refer to Schedule of Finishes on drawings.
6. Grout Color: Refer to Schedule of Finishes on drawings.
7. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as indicated on drawings and as follows, selected from manufacturer's standard shapes.

2.04 SETTING MATERIALS

- A. Source Limitations: For each tile installation, obtain compatible formulations of setting and grouting materials and waterproofing materials containing latex or latex additives from a single manufacturer.
- B. Latex-Portland Cement Mortar (Thin Set):
 1. Prepackaged dry-mortar mix combined with dry powder latex additive, one of the following
 - a. For Thin Set Placed over Slabs on Grade: ANSI A118.4 consisting of the following:
 - 1) Ultraflex 2 Mortar; MAPEI Corporation.
 - 2) Laticrete 253 Gold; Laticrete International Inc.
 - 3) Versabond Flex; Custom Building Products.
 - b. For Thin Set Tile Set over Walls, Membranes and Over Elevated Slabs: ANSI A118.15 consisting of the following:
 - 1) Kerabond Keralastic; MAPEI Corporation.
 - 2) Laticrete 272 mixed with Laticrete 333 Superflex; Laticrete International Inc.
 2. For wall applications, provide nonsagging mortar.
- C. Dry Set Mortar for Large and Heavy Tile (LHT Mortar): ANSI A118.4:
 1. Prepackaged dry-mortar mix combined with additives to minimize slump and facilitate a thicker bond coat, and specifically manufactured and recommended in writing by the mortar and underlayment manufacturer for use in LHT mortar assemblies; one of the following:
 - a. Ultraflex LFT Mortar; MAPEI Corporation.
 - b. Laticrete 4-XLT; Laticrete International Inc.

2.05 GROUTING MATERIALS

- A. Polymer-Modified Tile Grout (For Typical Applications): ANSI A118.7 compounded with calcium aluminate cement, non-shrinking, efflorescence free grout.
 1. Polymer Type: Dry, redispersible latex/polymer powder form, prepackaged with other dry ingredients, one of the following:
 - a. Prism; Custom Building Products.
 - b. Permacolor; Laticrete International Inc.
 - c. Ultracolor Plus FA; Mapei Corporation.
 2. Colors: Refer to Schedule of Finishes on the drawings.

2.06 ACCESSORY MATERIALS

- A. Cementitious Backer Units: Section 09 29 00.
- B. Joint Sealants:
 1. Typical Surfaces: "Mildew-Resistant Silicone Sealant", as specified in Section 07 92 00 – Joint Sealants.
- C. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.
- D. Grout Sealer: Grout manufacturers recommended product for sealing cementitious grout joints and that does not change color or appearance of grout.

- E. Metal Edge Strips for Wall Applications: Metallic, angle or L-shaped, depth to match tile and setting-bed thickness and having an integral provision for anchorage to substrate; white zinc alloy exposed-edge material; furnish in longest lengths available.
 - 1. Manufacturers: Provide products of one of the following:
 - a. Schluter Systems L.P.
 - b. Blanke Corporation.
 - c. Ceramic Tool Company, Inc.

2.07 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions. Add materials and liquid latex additives in accurate proportions. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
 - 1. Verify that substrates for setting tile are firm; dry; clean; free from oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 series of tile installation standards for installations indicated.
 - 2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
 - 3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust latter in consultation with Architect.
 - 4. Verify that cementitious backing board is installed in accordance with the manufacturer's installation instructions, firmly supported and fastened, and installed with fiberglass reinforcing tape at joints between panels completely embedded in thin-set mortar.
 - 5. Where cementitious tile backing board is indicated as substrate for wainscot, ensure that backing board has been properly shimmed to align with gypsum board above.
- B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Remove coatings, including curing compounds, and other substances that contain soap, wax, oil, or silicone and are incompatible with tile-setting materials by using a terrazzo or concrete grinder, a drum sander, or a polishing machine equipped with a heavy-duty wire brush.
 - 1. Remove protrusions, bumps, and ridges by sanding or grinding.
- B. Blending: For tile exhibiting color variations within the ranges selected during Sample submittals, verify that tile has been blended in the factory and packaged so tile units taken from one package show the same range in colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.03 INSTALLATION – GENERAL

- A. Use products in strict accordance with recommendations and directions of manufacturer.
- B. ANSI Tile Installation Standards: Comply with parts of ANSI A108 series of tile installation standards in "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated in ceramic tile installation schedules.
- C. TCNA Installation Guidelines: TCNA's "Handbook for Ceramic Tile Installation." Comply with TCNA installation methods indicated in ceramic tile installation schedules.
- D. Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on base, walls, and trim are the same size. Lay out tile work and center tile fields in both directions in each

space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.

1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
- E. Finished Surfaces: Finished surfaces shall present a flat, even appearance, free from waver, projections, and depressions.
- F. Movement (Contraction, Control, Expansion, and Isolation Joints) Joints: Locate sealant filled movement joints where recommended by the manufacturer of mortar and grout materials, but not less than the requirements of TCNA EJ171 which follows, and as accepted by the Architect. Form movement joints and other sealant-filled joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles. Where movement joints are to be butted, the ends shall touch and align.
 1. Spacing Guidelines:
 - a. 20 to 25 feet in each direction where interior tile work is not exposed to direct sunlight or moisture.
 - b. 8 to 12 feet in each direction where interior tile work is exposed to direct sunlight and moisture.
 - c. Where tilework abuts restraining surfaces such as perimeter walls, dissimilar floors, curbs, columns, pipes, ceilings, and where changes occur in backing materials, but not at drain strainers.
 - d. In the joint between tiles making up the inside corner of planes.
 - e. All contraction, control, expansion, isolation, seismic and cold joints in the horizontal structure and vertical surfaces shall continue through the tile surfaces, but not through membranes.
 - f. Vertical and Horizontal Joints Widths: Widths for quarry tile and paver tile shall be the same as the grout joint but not less than 1/4 inch or the width of the contraction, control, expansion, seismic, isolation joint whichever is greater; widths for ceramic mosaic tile and glazed wall tile shall not be less than 1/8 inch or the width of the control, expansion, seismic, joint whichever is greater.
 - g. Keep movement joints free from dirt, debris, grout, mortar, and setting bed materials. Prepare joints and apply sealants to comply with requirements in Section 07 92 00 "Joint Sealants."
- G. Metal Edge Strips: Install where exposed edge of wall tile meets, terminates, or overlays other wall finishes that finish flush with or below face of the tile, and the manufacturer of the field tile does not manufacture a tile edge transition trim. Provide metal edge strips as full length single units. Miter corners and smooth sharp edges.

3.04 LAYOUT

- A. Locate expansion joints and other sealant filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw cut joints after installation of tiles.
 1. Locate joints in tile surfaces directly above joints in concrete surfaces.
 2. Prepare joints and apply sealants to comply with requirements of Specification Section 07 92 00 – Joint Sealants.
- B. Lay out tilework so as to minimize cuts less than one-half tile in size.
- C. Lay out tile wainscots to next full tile beyond dimensions shown.
- D. Align wall joints to give straight, uniform grout lines, plumb and level.
- E. Make joints between tile sheets same width as joints within sheets so extent of each sheet is not apparent in finished work.

3.05 WALL TILE INSTALLATION

- A. Install in accordance with the mortar manufacturer's recommendations and requirements indicated below for ANSI setting bed methods, TCNA installation methods related to types of construction, and grout ANSI

installation methods and grout types. Where recommendations and methods conflict, the manufacturer's recommendations shall apply.

1. Latex Portland Cement Mortar Installation (using specified latex portland cement mortar material): ANSI A108.5.
2. Glass-mat, water-resistant, Gypsum Wallboard, Interior (Latex Portland Cement Mortar) Method: TCNA W245, place tiles maintaining 1/8-inch (3-mm) wide joints, and true accurate pattern as shown.
3. Cementitious Backerboard (Latex Portland Cement Mortar) Method: TCNA W244C, place tiles maintaining 1/8-inch (3-mm) wide joints, and true accurate pattern as shown.
4. Grout Installation: Do not begin grouting tiles until they are firmly set and, in no case, in less than 48 hours after they have been installed. Remove spacers, if any, prior to grouting. Comply with Latex-portland cement: ANSI A108.10. Fill joints of cushion edged tile to the depth of the cushion; fill joints of square edge tile flush with the tile surface. Do not permit mortar, mounting mesh, or spacer material to show through grouted joints. Provide hard finished grout, which is uniform in color, smooth, and without voids, pinholes, or low spots. Tool surfaces with shallow concave profile.

3.06 GROUTING

- A. Grouting shall be installed in accordance with ANSI A108.10 and the manufacturer's recommended procedures and precautions during application and cleaning, unless noted otherwise
- B. Grout tile to comply with the requirements of the following tile installation standards:
 1. For ceramic tile grouts (sand-portland cement, dry-set, commercial portland cement, and latex-portland cement grouts), comply with ANSI A108.10.
- C. Remove excess grout from tile surfaces in accordance with the grout and tile manufacturer's recommendations. Do not use excess amounts of water.
- D. Rinse tilework thoroughly with clean water before and after using chemical cleaners.
- E. Protect adjacent surfaces from damage caused by cleaning agents. Do not use cleaners which would damage tile or grout surfaces.

3.07 CURING

- A. Cure installation in accordance with the grout manufacturer's recommendations. Protect tile and grout during curing operations.
- B. Test cured grout, in the presence of the Architect, to confirm complete and proper hydration. Remove and

3.08 CLEANING AND PROTECTING

- A. Cleaning: On completion of placement, grouting and stripping, clean all ceramic tile surfaces so they are free of foreign matter.
 1. Remove latex-portland cement grout residue from tile as soon as possible.
 2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
 3. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's written instructions, but no sooner than 10 days after installation. Protect metal surfaces, cast iron, and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.
- B. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work.
- C. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure tile is without damage or deterioration at the time of Substantial Completion.
 1. When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls.

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- D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION

SECTION 09 51 13
ACOUSTICAL PANEL CEILINGS

PART 1 – GENERAL

1.01 SUMMARY

- A. This section includes the following:
 - 1. Acoustical lay-in panel ceilings and exposed suspended metal grid ceiling system.
 - 2. Perimeter trim and accessories.
- B. Finish Schedule Legend references **ACT1**
- C. Related Sections/Drawings include the following:
 - 1. Finish Legend on the drawings.
 - 2. Division 23 – Air Diffusion Devices in Ceiling System.
 - 3. Division 26 – Lighting Fixtures in Ceiling System.

1.02 ACTION SUBMITTALS

- A. Prepare the following submittals in accordance with Section 01 33 00 – Submittals Procedures.
- B. Product Data: Submit manufacturer's technical data for each type of acoustical ceiling unit and suspension system required.
- C. Shop Drawings: Layout and details of acoustical ceilings. Show locations of items which are to be coordinated with, or supported by the ceilings.
- D. Reflected ceiling plans illustrating location of each access panels with identification of the type of access panel, as coordinated in the field with the Architect.

1.03 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and address, names and addresses of Architects and Owner, and other information specified.
- B. Certification: Manufacturers certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards. For acoustical performance, each carton of material must carry and approved independent laboratory classification or NRC, CAAC and AC.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who has completed acoustical ceilings similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- B. Source Limitations for Ceiling Units: Obtain each acoustical ceiling tile from one source with resources to provide products of consistent quality in appearance and physical properties without delaying the Work.
- C. Source Limitations for Suspension System: Obtain each suspension system from one source with resources to provide products of consistent quality in appearance and physical properties without delaying the Work.
- D. Fire-Test Response Characteristics: Provide acoustical tile ceilings that comply with the following requirements:
 - 1. Fire Resistance Rating: Test in accordance with ASTM E 119, UL Classified and listed in UL "Fire Resistance Directory."
 - 2. Refer to Fire Resistance Directory for specified UL Design Number and related assembly construction data.

3. Surface-burning characteristics of acoustical tiles comply with ASTM E 1264 for Class A material as determined by testing identical products in accordance with ASTM E 84.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical ceiling units and suspension system components to Project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination or other causes.
- B. Before installing acoustical tiles, permit them to reach room temperature and stabilized moisture content.
- C. Handle acoustical ceiling units carefully to avoid chipping edges or damaging units in any way.

1.06 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install acoustical tile ceilings until spaces are enclosed and weatherproof, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
- B. Areas receiving ceiling work shall be broom-clean and uninterrupted for free movement of rolling scaffold.

1.07 SEQUENCING AND SCHEDULING

- A. Coordinate layout and installation of acoustical tiles and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.08 WARRANTY

- A. Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace acoustical panels that fail within the warranty period. Failures include, but are not limited to:
 1. Acoustical Panels: Sagging and warping
 2. Grid System: Rusting and manufacturer's defects
- B. The Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Refer to Interior Finish Schedule on drawings for Basis of Design manufacturer and product.

2.02 ACOUSTICAL PANELS FOR ACOUSTICAL PANEL CEILING SYSTEM

- A. Acoustical Panels (**ACT1**):
 1. Material: Mineral Fiber
 2. Type, Form, and Finish: Provide Type A, Form A2.2, Pattern E units in accordance with ASTM E1264 with acoustically transparent membrane with factory applied latex paint.
 3. Panel Size: 24 inches by 24 inches by 3/4-inch thickness.
 4. Surface Texture: Fine
 5. Light Reflectance (LR): ASTM E 1477; White Panel: Light Reflectance: 0.88.
 6. Flame Spread: ASTM E 1264; Fire Resistive Class A, Flame Spread less than 25.
 7. Noise Reduction Coefficient (NRC): ASTM C 423; Classified with UL label on product carton, 0.75
 8. Ceiling Attenuation Class (CAC): ASTM C 1414; Classified with UL label on product carton, 35
 9. Articulation Class: 170
 10. Edge/Joint Detail: Beveled tegular.
 11. Mold/Mildew Inhibitor: The product shall be treated with a paint that contains a biocide that inhibits or retards the growth of mold or mildew, ASTM D 3273.
 12. Humidity/Sag Resistance: HumiGuard Plus

13. Grid: 9/16 inch, exposed.

2.03 METAL SUSPENSION SYSTEM FOR ACOUSTICAL PANEL CEILING

- A. Components: Main beams and cross tees shall be commercial quality hot-dipped galvanized (galvanized steel, aluminum, or stainless steel) in accordance with ASTM A 653. Main beams and cross tees are double-web steel construction with type exposed flange design. Exposed surfaces chemically cleansed, capping pre-finished galvanized steel in baked polyester paint.
 1. Structural Classification: ASTM C 635, Heavy Duty.
 2. Color: Painted to match the color of the selected ceiling panels unless noted otherwise.
 - a. Grid Finish: Factory applied baked polyester paint finish; Color: White.
 3. Grid Materials: Commercial quality steel with hot dipped galvanized coating.
 4. All main runners and cross tees must bear appropriate UL Classification Markings.
 5. Attachment Devices: Size for 5 times design load indicated in ASTM C635, Table 1, direct-hung, unless otherwise indicated.
- B. Wire for Hangers and Ties: Zinc-coated carbon-steel wire, ASTM A641 Class 1 zinc coating, soft temper. Select wire diameter so its stress at three times hanger design load (ASTM C635, Table 1, direct-hung) will be less than yield stress of wire, but provide not less than 12 gauge-diameter wire.
- C. Support Channels and Hangers: Galvanized steel, size and type to suit application, to rigidly secure acoustic ceiling system including integral mechanical and electrical components with maximum deflection of 1/360.
 1. Accessories: Hanger clips, splices, and hold down clips required for suspended grid system.

2.04 METAL EDGE MOLDINGS AND TRIM

- A. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that fit acoustical panel edge details and suspension systems indicated; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners.
 1. Provide manufacturer's standard edge moldings that fit acoustical tile edge details and suspension systems indicated and that match width and configuration of exposed runners, unless otherwise indicated.
 2. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.

2.05 MISCELLANEOUS MATERIALS

- A. Acoustical Sealant for Concealed Joints: Manufacturer's standard nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber sealant recommended for sealing interior concealed joints to reduce airborne sound transmission. Refer to Section 07 92 00 – Joint Sealants.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Examine substrates and structural framing to which acoustical tile ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage, and other conditions affecting performance of acoustical tile ceilings.
 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Coordination: Furnish layouts for preset inserts, clips, and other ceiling anchors whose installation is specified in other Sections.

- B. Measure each ceiling area and establish layout of acoustical tiles to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width units at borders, and comply with layout shown on reflected ceiling plans.

3.03 INSTALLATION

- A. General: Install acoustical panel ceilings to comply with ASTM C 636 and seismic design requirements indicated, in accordance with manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
- B. Suspend ceiling hangers from building's structural members and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 - 2. Unless otherwise shown on the Drawings or required by the systems manufacturer's printed installation instructions, install hangers 4 ft. o.c. in rows 4 ft. apart.
 - 3. Splay hangers only where required and, if permitted with fire-resistance-rated ceilings, to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 4. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
 - 5. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure; that are appropriate for substrate; and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 - 6. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
 - 7. Space hangers not more than 48 inches o.c. along each member supported directly from hangers, unless otherwise indicated; and provide hangers not more than 8 inches from ends of each member.
 - 8. Ceiling Grid: Install direct hung ceiling grid system to the ceiling panel model sizes shown on the Drawings and in accordance with the manufacturer's printed installation instructions.
 - 9. When extending existing acoustical ceiling within a room, match existing grid pattern. Discontinuous grid patterns are prohibited.
- C. Install edge molding and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical units.
 - 1. Provide mitered corners with edge molding.
 - 2. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
 - 3. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8-inch in 12 feet. Miter corners accurately and connect securely.
 - 4. Do not use exposed fasteners, including pop rivets, on moldings and trim.
 - 5. Paint cut edges of molding and trim after installation; match color of grid using coating recommended in writing for this purpose by suspension system manufacturer.
- D. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
 - 1. Coordinate location of suspension system to facilitate access to cable trays located above the ceiling, while respecting the layout of lighting and other ceiling penetrations. Access to trays should occur directly adjacent to the tray. Ceiling panels directly below the tray will not be removed for access.
 - 2. Align new suspension system with existing system that is to remain.
- E. Coordinate the locations of upward ceiling access panels and downward ceiling access panels in the field with other disciplines and the Architect. Identify each access panel with a small black dot discreetly located and securely attached to the ceiling.

3.04 INSTALLATION OF PANELS

- A. Install lay-in acoustical panels with undamaged edges and fitted accurately, with no visible gaps, into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
 - 1. Scribe or cut panels to fit accurately at penetrations.
 - 2. Arrange directionally-patterned acoustical panels as indicated on reflected ceiling plans.
 - 3. Use procedures that will minimize damage or soiling of the units during installation. Replace units which are damaged or cannot be adequately cleaned, as directed by the Architect at no additional cost to the Owner.
 - 4. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension system runners and moldings.
 - 5. For reveal-edged panels on suspension system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
 - 6. For reveal-edged panels on suspension system members with box-shaped flanges, install panels with reveal surfaces in firm contact with suspension system surfaces and panel faces flush with bottom face of runners.
 - 7. For reveal edge panels where a full tile cannot be installed, cut reveal or rabbet to match factory edge at all border areas and vertical surfaces.
 - 8. Paint cut panel edges remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
 - 9. Comply with UL Design Number for acceptable component and hanger wire spacing, number and size of acoustical panels, fixture protection and other installation requirements.
 - 10. Install hold-down clips in areas indicated, in areas required by authorities having jurisdiction, and for fire-resistance ratings; space as recommended by panel manufacturer's written instructions, unless otherwise indicated required.
 - 11. Protect lighting fixtures and air ducts to comply with requirements indicated for fire-resistance-rated assembly.

3.05 TOLERANCES

- A. Suspended Ceilings: Install main and cross runners level to a tolerance of 1/8 inch in 12 feet, non-cumulative.
- B. Moldings and Trim: Install moldings and trim to substrate and level with ceiling suspension system to a tolerance of 1/8 inch in 12 feet, non-cumulative.

3.06 CLEANING

- A. Clean exposed surfaces of acoustical tile ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace tiles and other ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.
- B. Protect acoustical ceilings during the construction period so that they will be without any indication of deterioration or damage at the time of acceptance by Owner.

END OF SECTION

SECTION 09 65 16
RESILIENT FLOORING

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes resilient flooring. Furnish and install resilient flooring directly adhered over floors, where indicated on the Drawings, including all accessories necessary to complete the work.
- B. Related Sections:
 - 1. Basis of Design Manufacturer/Product: Refer to Finish Legend and Schedule of Finishes on drawings

1.02 ACTION SUBMITTALS

- A. Prepare the following submittals in accordance with Section 01 33 00 – Submittal Procedures.
- B. Product Data: For each type of product specified, describing physical and performance requirements, sizes, patterns, and colors available.
- C. Product Schedule: For flooring. Use same designations indicated on Drawings.

1.03 INFORMATIONAL SUBMITTALS

- A. Maintenance Data: Include in operating and maintenance manual specified in Section 01 77 19 – Closeout Requirements.

1.04 QUALITY ASSURANCE

- A. Provide each type of resilient flooring and accessories as produced by a single manufacturer, including recommended primers, adhesives, sealants, and leveling compounds.
- B. Installer Qualifications: Engage an experienced installer to perform work of this Section who has specialized in installing resilient products similar to those required for this Project and with a record of successful in-service performance.
- C. Fire-Test-Response Characteristics: Provide products with the following fire-test-response characteristics as determined by testing identical products per test method indicated below by a testing and inspection agency acceptable to authorities having jurisdiction.
 - 1. Critical Radiant Flux: 0.45 W/sq. cm or greater when tested in accordance with ASTM E 648.
 - 2. Smoke Density: Maximum specific optical density of 450 or less when tested in accordance with ASTM E 662.
- D. Materials shall be from a single production run and indicated on the carton label bearing the manufacturers color code. The color shall be uniform throughout.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to Project site in manufacturer's original, unopened cartons and containers, each bearing name of product and manufacturer, Project identification, and shipping and handling instructions.
- B. Store products in dry spaces protected from the weather, with ambient temperatures maintained between 60 and 80 degrees F.
- C. Store tile on flat surfaces.
- D. Move products into spaces where they will be installed at least 48 hours before installation, unless manufacturer recommends longer conditioning period in writing.

1.06 PROJECT CONDITIONS

- A. Maintain a temperature of not less than 40 degrees F or more than 90 degrees F in spaces to receive products for at least 48 hours before installation, during installation, and for at least 48 hours after installation, unless manufacturer's written recommendations specify longer time periods. After post-installation period, maintain a temperature of not less than 55 degrees F (13 degrees C) or more than 95 degrees F (35 degrees C).
- B. Install tile and base and accessories after other finishing operations, including painting, have been completed.
- C. Do not install products until they are at the same temperature as the space where they are to be installed.
- D. Close spaces to traffic during flooring installation and for time period after installation recommended in writing by manufacturer.
- E. Install flooring after other finishing operations, including painting, have been completed.
- F. Where items are indicated for installation on top of flooring, install flooring before these items are installed.

1.07 COORDINATION

- A. To prevent damage to the newly installed flooring, install flooring products after all other trades have completed their work. To further prevent damage after install until space is occupied, use of a reinforced fiber-based temporary floor protector product.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Subject to compliance with requirements, basis of design manufacturers and products of the manufacturer are indicated in the Schedule of Finishes on the drawings.

2.02 MATERIALS

- A. Resilient flooring basis of design selections: As indicated in the Schedule of Finishes on the drawings.

2.03 LVT (PLANK)

- A. LVT (keynote legend designation): **LVT**
 - 1. Classification: ASTM F1700, Class III, Type B
 - 2. Construction: Heavy commercial Luxury Vinyl Tile
 - 3. Finish: Techtonic
 - 4. Size: 6 inch x 48 inch
 - 5. Edge Treatment: Square edge
 - 6. Installation: Glue down
 - 7. Wear Layer thickness: 0.020 inch
 - 8. Overall thickness: 0.120 inch
 - 9. Color: As indicated in the Finish Legend on the drawings.
 - 10. Performance:
 - a. ASTM E648: Critical Radiant Flux: $\geq 0.45 \text{ W/cm}^2$ (Class I)
 - b. ASTM E662: NBS smoke: Less than 450
 - c. ASTM D2047 Static Coefficient of Friction: ≥ 0.5 SCOF, ADA compliant

2.04 VINYL EDGE STRIPS

- A. Basis of Design: Selected profile and height required to protect exposed edge of carpet and vinyl tile, and of maximum lengths to minimize running joints.
- B. Color: Colors to blend with flooring materials, as selected by the Architect from manufacturer's full range.

2.05 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by resilient flooring manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by flooring and adhesive manufacturers to suit resilient flooring and substrate conditions indicated.
 - 1. Vinyl Floor Tile: Adhesives shall have a VOC content of 50 g/L or less.
- C. Metal Edges Strips: Extruded aluminum with mill finish of width shown, of height required to protect exposed edges of flooring, and in maximum available lengths to minimize running joints.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
 - 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
 - 1. Installation of resilient flooring products indicates acceptance of surfaces and conditions.

3.02 PREPARATION

- A. Prepare flooring substrates according to resilient flooring product manufacturer's written instructions to ensure adhesion of resilient flooring.
- B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- C. Do not install resilient products until they are the same temperature as the space where they are to be installed.
 - 1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.
- D. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.03 RESILIENT FLOORING INSTALLATION – GENERAL

- A. Comply with manufacturer's written instructions for installing resilient flooring.
- B. Lay out floor tile from center marks established with principal walls, discounting minor offsets, so tile at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
 - 1. Lay tile square with room axis, and in a grid pattern (not staggered) unless otherwise indicated.
- C. Match floor tile for color and pattern by selecting tile from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tile.
- D. Scribe, cut, and fit flooring to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
- E. Extend flooring into toe spaces, door reveals, closets, and similar openings. Extend flooring to center of door openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on flooring as marked on substrates. Use chalk or other nonpermanent marking device.

- G. Adhere flooring to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.04 CLEANING AND PROTECTION

- A. Perform the following operations immediately after installing resilient products:
 - 1. Remove adhesive and other surface blemishes using cleaner recommended by resilient product manufacturers.
 - 2. Sweep or vacuum floor thoroughly.
 - 3. Do not wash floor until after time period recommended by flooring manufacturer.
 - 4. Damp-mop floor to remove marks and soil.
- B. Protect flooring against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by flooring manufacturer.
 - 1. Cover products installed on floor surfaces with undyed, untreated building paper until inspection for Contract Completion.
 - 2. Do not move heavy and sharp objects directly over floor surfaces. Place plywood or hardboard panels over flooring and under objects while they are being moved. Slide or roll objects over panels without moving panels.
 - 3. Clean floor surfaces not more than 4 days before dates scheduled for inspections intended to establish date of Contract Completion in each area of Project. Clean products according to manufacturer's written recommendations.

END OF SECTION

SECTION 09 91 13
PAINTING

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes surface preparation and field painting and finishing of interior and exterior surfaces including:
 - 1. Scheduled and otherwise identified interior and exterior surfaces.
 - 2. Surface preparation, priming, and finish coats specified in this section are in addition to shop priming and surface treatment specified in other sections, and include sealers, primers, stains, fillers and other applied materials used as prime or intermediate coats.
- B. Refer to drawings and schedules (e.g., Finish Schedule) for type, location and extent of finishes required, and include all touch-ups and field painting necessary to complete work shown, scheduled or specified.
- C. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically describe a particular item or a surface for a coating or color, paint the item or surface the same as similar adjacent equipment, materials or surfaces. If the schedules do not indicate color or finish, the Architect will select from standard colors and finishes available.

1.02 DEFINITIONS

- A. "Paint" as used herein means coating system materials including primers, emulsions, epoxy, enamels, sealers, fillers, and other applied materials whether used as prime, intermediate, or finish coats.

1.03 COLOR SCHEDULE

- A. Refer to color selections in finish schedule.
 - 1. Omissions in the color schedule shall not relieve the Contractor from performance in accordance with requirements of the Contract Documents.
 - 2. Obtain Architect's color, texture and sheen approval for painting unscheduled surfaces, if any.

1.04 ACTION SUBMITTALS

- A. Prepare submittals per requirements of Section 01 33 00 – Submittal Procedures.
- B. Product Data:
 - 1. Submit complete schedule of products proposed for use, by brand name and/or number including manufacturer's label analysis and description of products and their suitability for intended use for approval.
 - 2. Identify each material by manufacturer's catalog number, product name, and generic classification.
 - 3. Include typewritten list identifying paint systems and colors applied to each room, space, or item.
- C. Samples for Color and Sheen: Prepare one sample of each opaque finish paint specified in each color and sheen scheduled for appearance verification.
 - 1. Apply to 12 inch by 12 inch by ¼ inch hardboard. Apply sufficient paint thickness to provide proper hiding and appearance.
 - 2. Label each sample to indicate material, color, and sheen.
- D. Samples: Painting Systems:
 - 1. Prepare one sample of each opaque finish paint specified in each color and sheen scheduled for appearance verification.
 - 2. Submit samples on materials to which finishes will be applied, sample size. On one-half of the sample show the completed treatment, and on the other half show the successive steps taken in producing the finish.

- a. Minimum sample size of 4 by 8 inches.
 - b. Step back each coat and process at least one inch to show bare substrate and each coat and process in system build-up.
 - c. Label each sample to indicate materials, color sheen, DFT of each coat applied, and total system DFT.
3. Approved samples will be so marked; one set will be returned for the painter's use.
 4. Approved samples shall be standard of finish and color to be selected.
 5. No finishes shall be applied on the work until samples are approved.

1.05 INFORMATIONAL SUBMITTALS

- A. Submit the following separate for other submittals:
 1. Certification specified in Quality Assurance article.
 2. Manufacturer's instructions.

1.06 QUALITY ASSURANCE

- A. This Contractor shall have a minimum of five (5) years proven satisfactory experience and shall show proof before commencement of work that he will maintain a qualified crew of painters throughout the duration of the work. When requested, Contractor shall provide a list of the last three comparable jobs including, name and location, specifying authority / project manager, start / completion dates and value of the painting work. .
- B. Only qualified journeypersons, as defined by local jurisdiction shall be engaged in painting and decorating work. Apprentices may be employed provided they work under the direct supervision of a qualified journeyperson in accordance with trade regulations.

1.07 FIELD SAMPLES

- A. Benchmark Samples (Mockups): Provide a full-coat benchmark finish sample of each type of coating and substrate required on the Project. Duplicate finish of approved prepared samples.
 1. The Architect will select one room or surface to represent surfaces and conditions for each type of coating and substrate to be painted.
 - a. Wall Surfaces: Provide samples on at least 100 sq. ft. of wall surface.
 - b. Small Areas and Items: The Architect will designate an item or area as required.
 2. After permanent lighting and other environmental services have been activated, apply coatings in this room or to each surface according to the Paint and Coatings Schedules at the end of this section. Provide required sheen, color, and texture on each surface.
 - a. After finishes of mockups are accepted by the Architect, the Architect will use the approved mockup as the project standard for painting and coating work.
 3. Acceptance will be based on a final inspection of work by the Architect made at one time.
 4. Final approval of colors will be from job-applied samples.
 5. Execute all work under favorable conditions suitable for the production of good, durable work.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver all painting materials in sealed, original labeled containers bearing manufacturer's name, brand name, type of paint or coating and color designation, standard compliance, materials content as well as mixing and/or reducing and application requirements.
- B. Store all paint materials in original labeled containers in a secure (lockable), dry, heated and well-ventilated single designated area meeting the minimum requirements of both paint manufacturer and authorities having jurisdiction and at a minimum ambient temperature of 45° F (7° C). Only material used on this project to be stored on site.
- C. Upon completion of work, leave storage area clean and in same condition as remainder of work.

1.09 ENVIRONMENTAL REQUIREMENTS

- A. Environmental Conditions: Comply with the more restrictive of the following or manufacturer's requirements under which systems can be applied.
 - 1. Perform no interior painting or decorating work unless adequate continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above minimum requirements for 24 hours before, during and after paint application. Provide supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements
 - 2. Do not permit wide variations in ambient temperatures which might result in condensation on freshly coated surfaces.
 - 3. Apply water-based paints only when surface temperature and surrounding air temperatures in each room are between 50 degrees F and 95 degrees F, unless otherwise permitted by paint manufacturer's printed instructions.
 - 4. Apply solvent-thinned paints only when surface temperature and surrounding air temperatures in each room are between 45 degrees F and 95 degrees F, unless otherwise permitted by paint manufacturer's printed instructions.
- B. Do not apply interior coatings under any of the following conditions:
 - 1. When surface is not within the allowable moisture content as permitted by the paint manufacturer.
 - 2. When relative humidity is less than 20 percent or exceeds 85 percent.
 - 3. When temperature is less than 5 degrees F above dew point.
 - 4. Perform no painting or decorating work when the maximum moisture content of the substrate exceeds:
 - a. 15% for wood. .
 - b. 12 % for plaster and gypsum board.
 - 5. When dust may be generated before paints have dried.
- C. Provide lighting level of 80 foot candles measured mid-height at substrate surface during application of paints.

1.10 COORDINATION

- A. Schedule painting operations to prevent disruption of and by other trades.
- B. Review other section specifying prime coats to ensure compatibility of the total paint system for various substrates.
 - 1. Upon request from other trades, furnish information on characteristics for finish materials proposed for use to ensure compatibility of various parts.
 - 2. Test compatibility of existing coating, including shop applied primers and previously applied coating, by applying specified paint to small, inconspicuous area.
 - 3. If specified paint lifts or blisters existing coating, apply barrier or tie coat as recommended by paint manufacturer.
 - 4. If no compatible barrier or tie coat exists, remove existing coating completely and apply paint system as specified for new work.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Basis of Design Product Selection: Subject to compliance with requirements, provide products of the manufacturers indicated in the Finish Schedule on the drawings.
- B. Except for any special coatings specified or indicated elsewhere, provide painting products of one of the following manufacturers:
 - 1. Basis of Design: (SW) Sherwin-Williams Co., Cleveland, OH
 - 2. (BM) Benjamin Moore & Co., Montvale, NJ
 - 3. (PPG) PPG Paints, PPG Industries, Pittsburgh, PA

Note: Manufacturer designations in parenthesis are used in the Paint and Coatings schedule at the end of this section.

2.02 PAINT MATERIALS – GENERAL

- A. Provide manufacturer's 1st line professional quality paint/ coating materials for the coating systems specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
- B. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- C. Provide related materials, such as linseed oil, shellac, turpentine, or other accessory materials of the highest quality approved for use by the manufacturer of the paint and used within paint manufacturers recommended limits.

2.03 ACCESSORY MATERIALS

- A. Muriatic Acid, Mildewcide, TSP (Tri-Sodium Phosphate), Acidic-Detergent, Zinc Sulfate, Sodium Metasilicate, And Solvent: Commercially available, non-damaging to surface being cleaned; as specified in PDCA Specification Manual; acceptable to paint manufacturer.
- B. Metal Conditioner: Proprietary phosphoric acid based, etching type solution; acceptable to paint manufacturer.
- C. Rust Inhibitor: Water containing 0.32 percent of sodium nitrite and 1.28 percent by weight of secondary ammonium phosphate (dibasic); or water containing 0.2 percent by weight of chromic acid or sodium chromate or sodium dichromate or potassium dichromate.
- D. Compounds: Spackling compound, putty, plastic wood filler, liquid de-glosser, latex patching plaster, latex base filler, thinners, and other materials not specifically indicated but required to achieve finishes specified. Pure, of highest commercial quality, compatible with paints and acceptable to paint manufacturer.
- E. Provide related materials, such as linseed oil, shellac, turpentine, or other accessory materials of the highest quality approved for use by the manufacturer of the paint and used within paint manufacturers recommended limits.

2.04 MIXING AND TINTING

- A. Unless otherwise specified herein or pre-approved, all paint shall be ready-mixed and pre-tinted. Re-mix all paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and color and gloss uniformity.
- B. Paste, powder or catalyzed paint mixes shall be mixed in strict accordance with manufacturer's written instructions.
- C. Where thinner is used, addition shall not exceed paint manufacturer's recommendations. Do not use kerosene or any such organic solvents to thin water-based paints.
- D. Apply paints of consistency recommended by manufacturer. If required, thin paint for spraying according in strict accordance with paint manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Architect.
- E. Use factory prepared colors matching approved samples. Site tinting is not permitted.

2.05 GLOSS/SHEEN RATINGS

- A. Paint gloss shall be defined as the sheen rating of applied paint, in accordance with the following MPI values:

Gloss Level	Description	Units @ 60 degrees	Units @ 85 degrees
G1	Matte or Flat finish	0 to 5	10 max.
G2	Velvet Finish	0 to 10	10 to 35
G3	Eggshell finish	10 to 25	10 to 35

G4	Satin finish	20 to 35	35 minimum
G5	Semi-Gloss finish	35 to 70	
G6	Gloss finish	70 to 85	
G7	High-gloss finish	>85	

PART 3 – EXECUTION

3.01 INSPECTION OF SURFACES

- A. Examine substrates, areas, and conditions, with the applicator present, under which painting will be performed for compliance with paint application requirements.
 - 1. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
 - 2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.
- B. Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
 - 1. Notify the Architect of anticipated problems in application, system specifications, or possible incompatibility of coatings over substrates which are pre-primed or primed by others.
- C. Notify Architect a minimum of one working day prior to painting about possible problems resulting from using the specified materials over previously finished substrates.
- D. Conduct alkali testing with litmus paper on cementitious, and masonry surfaces, and do not begin painting if surfaces exceed alkalinity allowed by paint manufacturer.
- E. Test moisture content of surfaces using an electronic moisture meter. Do not begin application of coatings unless moisture content of exposed surfaces is below the following maximum values:
 - 1. Gypsum Wallboard and Plaster: 12 percent.
 - 2. Masonry Surfaces: 12 percent.
 - 3. Finish Woodwork: 7 to 10 percent moisture content.
 - 4. Wood Surfaces: 15 percent.
 - 5. Vertical Concrete Surfaces: 12 percent.
 - 6. Horizontal Concrete Surfaces: 8 percent.
- F. Coordination of Work: Review other sections in which primers are specified to ensure compatibility for the total system with various substrates.

3.02 SURFACE-PREPARATION FOR NEW AND EXISTING SURFACES TO BE PAINTED

- A. Remove and securely store all miscellaneous hardware and surface fittings / fastenings (e.g. electrical plates, mechanical louvers, door and window hardware (e.g. hinges, knobs, locks, trim, frame stops), removable rating / hazard / instruction labels, washroom accessories, light fixture trim, etc. from wall and ceiling surfaces, doors and frames, prior to painting. Carefully clean and replace all such items upon completion of painting work in each area. Do not use solvent or reactive cleaning agents on items that will mar or remove finishes (e.g. lacquer finishes). Remove doors to be field painted before painting to paint bottom and top edges and then re-hang.
- B. Protect all adjacent interior surfaces and areas, including rating and instruction labels on doors, frames, equipment, piping, etc., from painting operations and damage with drop cloths, shields, masking, templates, or other suitable protective means and make good any damage caused by failure to provide such protection.
- C. Substrate defects shall be made good and sanded by others ready for painting particularly after the first coat of paint. Start of finish painting of defective surfaces (e.g. gypsum board) shall indicate acceptance of substrate and any costs of making good defects shall be borne by the painter including re-painting of entire defective surface (no touch-up painting).

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- D. Clean and prepare substrate surfaces in accordance with manufacturer's instructions for each particular substrate condition. Remove oil and grease before mechanical cleaning. Clean and correct defects and deficiencies in substrate surfaces to be painted before applying paint or finish treatments.
 - 1. Do not paint over dirt, rust, scale, grease, oil, moisture, or marred surfaces, mildewed surfaces or other conditions detrimental to formation of a durable paint film.
 - 2. Correct minor defects and clean surfaces which affect work of this Section.
 - 3. Seal marks which may bleed through surface finishes.
 - 4. Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach solution. Rinse with clean water and allow surface to dry thoroughly.
 - 5. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- E. Hand-Tool Cleaning: Use wet sanding and wet scraping methods only. Lightly mist substrate before sanding or scraping. Acceptable hand-tools include scrapers, wire brushes, sandpaper, steel wool, nonmetallic pads, and dusters. Because of varying substrates, selection of tools shall be the responsibility of Contractor. After hand-cleaning is attempted, power tool cleaning may be required to complete cleaning and surface preparation.
- F. Solvent cleaning may be used to remove oil, grease, smoke, tar, and asphalt from painted or unpainted surfaces before preparation work begins. In addition, if necessary, spot-solvent cleaning may be employed just prior to the commencement of paint application, provided enough time is allowed for complete evaporation. Clean solvent and clean rags shall be used for the final wash to ensure that all foreign materials have been removed.
- G. Shop Primed Steel and Ferrous Metal Surfaces:
 - 1. Bare Metal Solvent Cleaning: Clean with solvents to remove oil, grease, and other contaminants before other cleaning treatments are used. Do not use solvents, including primer thinner and turpentine, which leave residue.
 - 2. Shop Primed Steel Surfaces: Surfaces shall be clean and dry. Fill any open joints or deep abrasions in shop prime coat with filler, feather edges, sand smooth, and touch-up with metal primer compatible with shop primer, extending primer beyond treated area.
 - 3. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces; remove rust, oil, grease, dirt, and other foreign substances. Use removal or cleaning methods that comply with paint manufacturer's written recommendations.
 - a. Touch up bare areas and prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with same primer as shop coat.
 - 4. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents until surfaces are free of oil and surface contaminants.
 - a. Pretreat surfaces prior to application of prime coat with phosphate pretreatment. Strictly follow manufacturer's directions as to cleaning prior to treatment, application of treatment, and after-rinse.
 - b. Thoroughly clean all surfaces receiving directly applied prime coat with solvent or chemical washes, to remove oil, grease and other film. Wipe dry with clean cloths. Prime with zinc oxide primer.
 - 5. Conditioner (Apply to Bare Metal): Apply phosphoric acid-based, etching-type surface treatments after solvent cleaning and according to manufacturers' written instructions. Rinse with clear water when reaction is complete. Allow at least 15 to 30 minutes but not less time than recommended by manufacturer for metal conditioner to condition the metal surface. Do not allow conditioner to dry before rinsing. If white rust (zinc oxide) appears after drying, wash clean with denatured alcohol immediately before priming.
- H. Wood to Receive Painted Finish: Wood to be painted shall be back-primed on sides and edges. Use wood primer for back-priming, where opaque finish is specified. Fill voids and nail holes using filler compatible with the finishing system. Sand between coats.
- I. New Plaster, Patched Existing Plaster Surfaces:
 - 1. New plaster shall be dried thoroughly at least 30 days before painting and shall be cured and hard. Repair damaged areas with appropriate patching material.

2. Fill minor cracks and defects in existing plaster with spackle compound; fill large cracks and defects with patching plaster. Acid wash or neutralize high alkalinity or "hot spots." Prime all bare, filled and patched plaster with primer-sealer specified for new plaster.
3. Neutralize surface of plaster with mild acid solution as recommended by paint manufacturer. In lieu of acid neutralization, provide manufacturer's written recommendation for plaster primer over alkaline plaster surfaces.

3.03 PROTECTION AND MASKING

- A. Take particular care to protect the following:
 1. Adjacent surfaces.
 2. Masonry surfaces.
 3. Metal surfaces.
 4. Wood surfaces.
- B. Protect areas retaining their original finishes from damage and overpaint.
- C. Protect the work of other trades against any overpainting, marring, masking residue, or other damage.
- D. Safeguard the building's lighting fixtures, floors, natural woodwork, masonry work, and equipment and materials to be installed.
- E. Mask, tape, and take great care when applying finish materials to areas adjacent to original finishes. Use products that will not damage surfaces or leave adhesive residue.
- F. Mask off with masking film and masking tape and/or cover with drop cloths all building elements and equipment not to be decorated prior to material application to ensure that over-spray or damage does not occur.
- G. If accessibility to surfaces is restricted, it is the paint contractor's responsibility to request that the obstructing materials be moved.
- H. All trades shall be responsible for making good any damage for which they are responsible. Correct damage by cleaning, repairing, or replacing, and repainting, as acceptable to the Architect.

3.04 APPLICATION

- A. Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied. Coat all surfaces specified, scheduled, illustrated, and otherwise exposed.
 1. Apply paint of type, color, and sheen as scheduled.
 2. Number of coats specified is the minimum number acceptable.
 3. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
 4. Provide finish coats that are compatible with primers used.
 5. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convactor covers, covers for finned-tube radiation, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
 6. Finish edges of paints adjoining other materials or colors sharp and clean, without overlapping.
 7. Sand lightly between each succeeding enamel or varnish coat.
 8. Omit first coat (primer) on metal surfaces which have been shop-primed and touch-up painted, unless otherwise indicated.
 9. Labels: Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.
- B. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the room treatment schedule or the paint schedules do not specifically mention an item or a surface, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate a paint coating system for a particular substrate, defer to the Architect for selection of finish system and color.
 1. At any surface which is not scheduled to be painted, but which has been affected by cutting and patching or selective demolition, paint the surface with the pertinent coating system for the

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substrate type as scheduled in this section to the extent of the surface area. At walls, to inside or outside corners of the affected area; at ceilings to the extent of the ceiling area in each space.

- C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels, unless otherwise specifically indicated to be painted.
- D. Scheduling Painting: Apply prime coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
 - 1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. If sanding is required to maintain a smooth, even surface according to manufacturer's written instructions, sand between applications.
 - 2. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
 - 3. Omit primer on metal surfaces that have been shop primed and touchup painted with compatible materials.
 - 4. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
 - 5. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.
- E. Application Methods: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions and as defined in this section.
 - 1. Brushes: Use brushes best suited for the type of material applied. Use brush of appropriate size for the surface or item being painted.
 - 2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.
 - 3. Spray Equipment: Use airless spray equipment with orifice size as recommended by the manufacturer for the material and texture required.
- F. Apply paint systems to total dry film thickness in manufacturers specifications. Apply material at not less than manufacturer's recommended spreading rate. Do not exceed maximum single coat thickness recommendation by paint manufacturer. Do not double-back with spray equipment by building up film thickness of two coats in one pass. Ensure that edges, corners, crevices, welds, and exposed fasteners receive dry film thickness equivalent of flat surfaces.
- G. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.
- H. Prime Coats: Before applying finish coats, roll a prime coat of material, as recommended by the manufacturer as follows:
 - 1. Apply a prime coat to material which is required to be painted or finished and which has not been prime coated by others.
 - 2. Re-coat primed and sealed walls and ceilings where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects due to insufficient sealing.
 - 3. Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling such as laps, irregularity in texture, skid marks or other surface imperfections.
- I. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- J. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not in compliance with specified requirements.

3.05 APPLICATION: BREATHABLE MASONRY COATING

- A. Test each surface and/or material to be treated to ensure adhesion and compatibility with high performance coating. The surface to be treated must be clean and free of all foreign matter and as dry as possible to ensure proper penetration of high performance coating.
- B. Apply high performance coating to masonry surfaces that comply with manufacturer's written instructions; use roller, brush or spray application methods, at Contractor's option.
- C. Apply high performance coating to vertical, visibly dry surfaces and comply with manufacturer's written instructions.
- D. Proceed with application of uniform high performance coating in an orderly manner once application rate has been tested; work from top down. Brush out runs or drips. Back roll spray application for proper adhesion.
 - 1. Apply high performance coating to meet minimum thickness, as recommended by manufacturer.
- E. Reapply second coat of high performance coating, as recommended by manufacturer.
 - 1. Apply once first coat is dry to touch, or within two (2) to four (4) hours of first coat.
- F. Use manufacturer recommended field adhesion test method that complies with ASTM D 4541.

3.06 CLEANING AND PROTECTION

- A. Cleaning: Comply with Section 01 77 19 – Closeout Requirements. Promptly remove spilled, splashed, or spattered paints. Clean spots, oil, and other soiling from finished surfaces using cleaning agents and methods which will not damage materials.
 - 1. If completed construction is damaged beyond normal cleaning or repair by painting operations, replace damaged items at no additional cost to Owner.
 - 2. Maintain premises and storage areas free of unnecessary accumulation of tools, equipment, surplus materials, and debris.
 - 3. Collect waste, cloths, and material which may constitute fire hazards and place in closed metal containers; remove from site daily along with empty containers.
- B. Protection: Protect finished work in accordance with Section 01 50 00 – Temporary Facilities and Controls.
 - 1. Protect work of other trades against damage from paint activities. Correct damage by cleaning, repairing, replacing, and repaint as acceptable to Architect.
 - 2. Provide "Wet Paint" signs and other methods to protect newly coated surfaces. Remove when directed or when no longer needed.

3.07 EXTERIOR PAINT AND COATINGS SCHEDULE

- A. Wood window frames and sash and other exterior wood:
 - 1. Exterior – Wood:
 - a. Satin Finish
Primer: Exterior Wood Primer
1st Coat: A-100 Exterior Latex Satin
2nd Coat: A-100 Exterior Latex Satin
 - 2. Exterior – Restored Wood Window Frames:
 - a. Satin Finish
Primer: Exterior Oil-Based Wood Primer (not less than 1.5 mils DFT)
1st Coat: Solo 100% Acrylic Interior/Exterior Latex Semi-Gloss A76 Series (not less than 1.5 mils DFT)
2nd Coat: Solo 100% Acrylic Interior/Exterior Latex Semi-Gloss A76 Series (not less than 1.5 mils DFT)
- B. Breathable, High Performance Protective Coating for Masonry:
 - 1. Refer to Section 09 97 23 – Silicate Masonry Coatings.
 - a. Color as selected by Architect.

3.08 EXTERIOR HIGH-PERFORMANCE COATING SCHEDULE

- A. Structural and Ornamental Metal (Exterior Exposed Structural Steel and miscellaneous steel):
 - 1. Surface Prep: Commercial Blast Cleaning SSPC-SP3
 - 2. Intermediate:
 - a. S-W Macropoxy 646 Fast Cure Epoxy (5.0 – 10.0 mils dry)
 - 3. Finish Coats (2 coats):
 - a. S-W Pro Industrial Waterbased Acrolon 100 Polyurethane Semi-Gloss (1.4 mils dry per coat)

3.09 INTERIOR PAINT AND COATINGS SCHEDULE

- A. Schedule: Provide products and number of coats specified. Use of manufacturer's proprietary product names to designate colors, materials, generic class, standard of quality and performance criteria and is not intended to imply that products named are required to be used to the exclusion of equivalent performing products of other manufacturers.
- B. Shop Primed Metal: Ferrous Metal Surfaces for semi-gloss finish including Ducts Visible Through Grilles or Louvers:
 - 1. First Coat: Primer
(NOTE: Primer also required on galvanized surfaces. All shop primed surfaces shall be reprimed with proper primer per manufacturer's instructions prior to applying coatings scheduled herein).
 - 2. Interior Latex Enamel: Factory-formulated latex enamel for interior applications:
 - a. 1 coat S-W; ProCryl Universal Metal Primer B66W310 Applied at a dry film thickness of not less than 3.0 mils
2 coats S-W Pro Industrial Acrylic Semi-Gloss Coating, B66-650 Series at 2.5 to 4.0 mils dry, per coat.
 - b. 1 coat: BM Super Spec® HP Alkyd Metal Primer P06 (323 g/L)
2 coats: BM Advance Waterborne Interior Alkyd Semi-Gloss 793 (48 g/L)
 - c. 1 coat: PPG; Speedhide Rust-Inhibitive Steel Primer, 6-208 Series; applied at 1.5 mils minimum DFT
2 coats: PPG; Speedhide Zero Interior Latex Semi-Gloss, 6-5510 Series; applied at 1.5 mils minimum DFT.
- C. Interior Wood Trim for Opaque Finish: (Acrylic-Enamel and Semigloss Alkyd-Enamel Finishes: Factory-formulated alkyd- or acrylic-latex based interior wood primer)
 - 1. Semi-Gloss Finish: Two finish coats over a wood undercoater.
 - a. 1 Coat: S-W PrepRite ProBlock Latex B51 Series: Applied at a dry film thickness of not less than 1.4 mils (4 mils wet).
2 Coats: S-W ProMar 200 Zero VOC Latex Semi-Gloss, B31-2600 Series: Applied at a dry film thickness of not less than 1.7 mils per coat (4 mils wet).
 - b. 1 Coat –BM Fresh Start Multi-Purpose Primer (023)
2 coats: BM Advance Waterborne Alkyd Finish Satin (792), Semi-Gloss (793), High Gloss (794)
 - c. 1 coat: PPG SEAL GRIP® Interior/Exterior Acrylic Universal Primer/Sealer 17-921XI
2 coats PPG: SPEEDHIDE® Interior Enamel Latex Semi-Gloss 6-500
- D. Gypsum Board Ceilings: (Flat Sheen)
 - 1. 1 coat: S-W ProMar 200 Interior Latex Wall Primer, B28W8200, (4 mils wet, 1.3 mils dry per coat)
2 coats: S-W ProMar 200 Interior Latex Flat Wall Paint, B30 Series, (4 mils wet, 1.6 mils dry per coat)
 - 2. 1 coat Benjamin Moore; Ultra Spec 500 Interior Latex Primer N534 (0 g/L)
2 coats: Benjamin Moore; Ultra Spec 500 Interior Latex Flat N536 (0 g/L)
 - 3. 1 coat PPG: "Speedhide zero Interior Zero VOC Latex Sealer 6-4900XI." (0 g/L)
2 coats PPG: "Speedhide zero Interior Zero VOC Latex Flat 6-4110XI." (0 g/L)
- E. Plaster Substrates: (Eggshell sheen)

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1. 1 Coat: S-W ProMar 200 Interior Latex Wall Primer, B28W8200, (4 mils wet, 1.3 mils dry per coat).
2 Coats: S-W ProMar 200 Acrylic Latex Egg-Shell Enamel B20W200, (4 mils wet, 1.6 mils dry per coat)
2. 1 coat BM Ultra Spec 500 Interior Latex Primer N534 (0 g/L)
2 coats: BM; Ultra Spec 500 Latex Eggshell N538 (0 g/L)
3. 1 coat PPG: "Speedhide zero Interior Zero VOC Latex Sealer 6-4900XI." (0 g/L)
2 coats PPG: "Speedhide zero Interior Zero VOC Latex Eggshell 6-4310XI Series." (0 g/L)

END OF SECTION

SECTION 09 97 23
SILICATE MASONRY COATINGS

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes surface preparation and application of mineral silicate coatings on historic exterior brick masonry.
- B. Work includes:
 - 1. Cleaning and preparation of existing historic masonry surfaces.
 - 2. Application of silicate-based mineral coatings to provide a breathable, whitewash-like finish.
- C. Related Sections:
 - 1. Section 01 35 29 – Historic Treatment Procedures
 - 2. Section 01 60 00 – Product Requirements

1.02 REFERENCE STANDARDS

- A. ASTM Standards:
 - 1. ASTM D3359 – Standard Test Methods for Measuring Adhesion by Tape Test.
 - 2. ASTM D523 – Standard Test Method for Specular Gloss.
 - 3. ASTM E96 – Standard Test Methods for Water Vapor Transmission of Materials.
- B. Preservation Briefs (National Park Service):
 - 1. Preservation Brief 1: Cleaning and Water-Repellent Treatments for Historic Masonry Buildings.

1.03 DEFINITIONS

- A. Silicate coating base coat: The first applied coat of the sol silicate coating.
- B. Silicate coating, top coat: The second applied coat of the sol silicate coating.
- C. Dilution: A sol silicate based diluent used to thin the silicate base coat.

1.04 SYSTEM DESCRIPTION

- A. A materials-compatible highly vapor permeable decorative coating system offering severe weathering protection for exterior exposure. Install over mineral surfaces.
 - 1. Silicate Coating: A two coat system with UV and alkaline resistant inorganic pigments in the specified color. Coatings penetrate the surface and in a chemical reaction with the substrate results in extremely high vapor permeability that is unaffected by acids, UV exposure, or air-borne pollutants. Provides weathering protection without reducing substrate vapor permeability.

1.05 ACTION SUBMITTALS

- A. Prepare submittals in accordance with Section 01 30 00 – Submittal Procedures.
- B. Product Data: Submit product data showing material proposed. Submit sufficient information to determine compliance with the Drawings and Specifications. Provide published documentation describing materials, characteristics, and limitations.
- C. Samples: Provide two 12" x 12" mock-up panels applied to representative brick surfaces showing color and finish
 - 1. Submit samples for initial color selection for each specified finish.

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2. Submit samples in form of manufacturer's color charts showing full range of colors and finishes available. Where finishes involve normal color variations, include samples showing the full range of variations expected.
 3. Submit samples for verification purposes. Additional samples may be required to show fabrication techniques and workmanship.
- D. Certifications: Submit documentation from manufacturer confirming compliance with silicate mineral paint properties.
- E. Manufacturer's Instructions: Submit manufacturer's instructions including technical data sheets, material safety data sheets, mixing instructions, application requirements, special procedures, and conditions requiring special attention.

1.06 QUALITY ASSURANCE

- A. Qualifications:
1. Manufacturer Qualifications: Provide evidence that Manufacturer is a firm engaged in the manufacture of silicate coatings of types required, and whose products have been in satisfactory use in similar service for a minimum of thirty years.
 2. Applicator Qualifications: Provide evidence Applicator is a firm having a minimum of three years of successful application experience with projects similar in type and scope to that required for this Project, and approved by the manufacturer.
- B. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances, and regulations of Federal, State, and local authorities having jurisdiction. Obtain necessary approvals from such authorities.
- C. Pre-Application Conference: Conduct pre-application conference in accordance with Section 01 31 19 – Project Meetings.
1. Prior to commencing the application, meet at the Project site to review the material selections, application procedures, and coordination with other trades.
 2. Review mock-ups during the pre-application conference.
 3. Coordinate with the Owner and the Architect to establish the date and time of the pre-application conference with the Contractor, the Applicator, manufacturer's representatives, and any trade that requires coordination with the work.

1.07 MOCK-UP

- A. Mock-Ups: Prior to application of the work, fabricate and erect mock-ups for each type of finish and application required to verify selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution.
- B. Build mock-ups to comply with the following requirements, using materials indicated for final unit of work. Locate mock-ups on site in location and of size indicated or, if not indicated, as directed by the Architect.
1. Demonstrate the proposed range of aesthetic effects and workmanship to be expected in the completed work.
 2. Obtain the Architect's acceptance of mock-ups before start of final unit of work.
 3. Retain and maintain mock-ups during construction in undisturbed condition as a standard for judging completed unit of work.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the Project site in supplier's or manufacturer's original wrappings and containers, labeled with supplier's or manufacturer's name, material or product brand name and lot number, if any.
- B. Store materials in their original, undamaged packages and containers, inside a well-ventilate area protected from weather, moisture, soiling, extreme temperatures, and humidity.

1.09 PROJECT CONDITIONS

- A. Substrate and ambient air temperature must be between 41 °F (5 °C) and 86 °F (30 °C). Maintain temperature during and after application.
- B. Do not apply silicate coating over damp substrate, when rain is expected, in high winds, or sun heated substrate during application.
- C. Restrict traffic from area where coating is being applied or is curing.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design: Masonry Coatings:
 - 1. KEIM Soldalit by KEIM Mineral Coatings of America, Inc..
- B. Other Acceptable Manufacturer/Product:
 - 1. masonRE Mineral Coating, Cathedral Stone Products, Inc.
- C. Substitutions: Not permitted without prior written approval of Architect.

2.02 MATERIALS

- A. Coatings – General: Provide complete systems formulated and recommended by manufacturer for the applications indicated, in the thicknesses indicated.
- B. Silicate Coating: KEIM Soldalit, sol-silicate (combination of silica sol and potassium silicate) based mineral coating.
- C. Primer: KEIM Soldalit-Fixativ, or as recommended by manufacturer for porous or weathered surfaces.
- D. Finish Characteristics:
 - 1. Color: Custom-tinted to Architect-approved whitewash tone (translucent white appearance).
 - 2. Texture: Matte, breathable, and non-film-forming.
 - 3. Vapor Permeability: Complies with ASTM E96.
 - 4. Lightfastness: Inorganic pigments with UV stability.
- E. Cleaners: Manufacturer-recommended products compatible with historic masonry.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions: Examine areas and conditions under which the work is to be applied, and notify the Contractor in writing, with a copy to the Owner and the Architect, of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.
 - 1. Verify substrate is secure, sound, dry, and absorbent, and free of dirt, grease, salts, oil-based paints, release agents, curing agents, and other bond breakers.
 - 2. Verify substrate has no pretreatments or priming materials applied.
 - 3. Verify materials to be coated are fully cured to manufacturer recommendations.
 - 4. Beginning of the work shall indicate acceptance of the areas and conditions as satisfactory by the Applicator.

3.02 PREPARATION

- A. Brick Masonry: Follow manufacturer's recommended substrate preparation.
- B. Remove substances that would bleed through finished coatings. Clean surfaces of loose foreign matter in accordance with coating manufacturer's instructions..

- C. Protect adjacent surfaces and materials not receiving coating from spatter and overspray; and if necessary to provide adequate protection. Repair damage.

3.03 COATING APPLICATION

- A. Conform to reviewed product data, manufacturer's written instructions, and provisions of the Contract Documents. Apply coatings in accordance with manufacturer's instructions, to thicknesses specified.
- B. Primer Application:
 - 1. Apply KEIM Soldalit-Fixativ to absorbent or chalky surfaces as recommended
- C. Plan the work properly.
 - 1. Work ahead of the sun on shaded façades.
 - 2. Work to logical stopping points (corners, seams, architectural features, etc.).
 - 3. Apply coatings maintaining a wet edge to desired finish.
 - 4. Protect from wind and rain prior to, during, and for a minimum 24 hours after application.
- D. Use brush, roller, or spray techniques appropriate for historic substrates.
- E. Apply two coats of KEIM Soldalit, allowing proper drying time between coats.
- F. Finish to achieve a breathable, mineral-matte surface that replicates the appearance of a traditional lime whitewash.

3.04 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.
- B. Clean surfaces immediately of overspray, splatter, and excess material.
- C. After coating has cured, clean and replace finish hardware, fixtures, and fittings previously removed.

3.05 PROTECTION

- A. Protect surrounding materials and landscaping during application.
- B. Remove overspray, drips, and splatters promptly using water and soft brushes.
- C. Protect coated surfaces from precipitation and contaminants until fully cured.

END OF SECTION

SECTION 10 28 13 TOILET ACCESSORIES

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes toilet and bath accessories.
 - 1. Furnish toilet and bath accessory templates, to locate anchorage reinforcement, to trades responsible.
- B. Related Sections:
 - 1. Section 06 10 00 – Rough Carpentry: Wood blocking for support of toilet and bath accessory items.
 - 2. Section 09 29 00 – Gypsum Board: For required wood or metal supports within metal stud wall system.
 - 3. Section 09 30 13 – Ceramic Tiling.
 - 4. Refer to Drawings for toilet accessory schedule and accessory mounting heights.

1.02 REFERENCES

- A. ICC A117.1 – Accessible and Usable Buildings and Facilities.
- B. Ohio Building Code – Chapter 11 Accessibility.

1.03 SYSTEM DESCRIPTION

- A. Toilet accessories shall be provided to conform with ICC A117.1 and State and Local Regulations. These requirements supersede Technical Specifications in this Section.
 - 1. Product data on accessories indicating quality, describing size, finish, details of function, attachment methods.
 - 2. Schedule indicating types, quantities, sizes, and installation locations (by room) for each toilet accessory item to be provided for project.
 - 3. Setting drawings, templates, instructions, and directions for installation of anchorage devices and cut-out requirements in other work.
 - 4. Maintenance instructions including replaceable parts and service recommendations.

1.04 ACTION SUBMITTALS

- A. Prepare the following submittals in accordance with Section 01 33 00 – Submittal Procedures.
- B. Shop Drawings:
 - 1. Plans: Locate each specified unit in project.
 - 2. Elevations: Indicate mounting height of each product.
 - 3. Details: Indicate anchoring and fastening details, required locations and types of anchors and reinforcement, and materials required for installation of specified products.
- C. Verification Samples: One sample chips of each specified color and finish.

1.05 INFORMATIONAL SUBMITTALS

- A. Literature: Manufacturer's product data sheets, for each item furnished hereunder.
- B. Schedule: Complete schedule, indicating types, quantity, and model numbers of accessories for each location in which the accessories will be installed.
- C. Selection samples: Sample color chips indicating each manufacturer's full range of colors available for selection by Architect.
- D. Verification samples: Complete units, as requested by Architect.
- E. Manufacturer's Warranty:

1. Deliver to the Owner upon completion of the work of this Section, applicable manufacturer's standard warranties.
- F. Closeout Submittals: Warranty, issued and executed by manufacturer, and countersigned by Contractor.
 1. One set of special adjusting or installation tools unique to the products furnished under this section.
 2. Keys to accessories furnished under this section.

1.06 QUALITY ASSURANCE

- A. Source Limitations: For products listed together in the same articles in Part 3, provide products of same manufacturer unless otherwise scheduled or approved by Architect.
- B. Furnish accessory manufacturer's inserts and anchoring devices for use in masonry or concrete; coordinate delivery with other work to avoid delay.
- C. Design, fabricate, and install handicapped toilet compartment grab bars capable of withstanding a downward dead load of at least 250 lb. per foot without damage or permanent set to grab bar members or anchors.
- D. Exercise care to prevent damage to existing surfaces or equipment. At time of completion, accessories shall be in perfect condition, well anchored, and in proper alignment at the location indicated.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Storage: Deliver accessories in manufacturer's original containers and store in same until installation.
- B. Keys: Furnish 2 keys for each accessory item required to have a lock. Seal in clearly marked envelopes and turn over to Owner prior to building acceptance.

1.08 PROJECT CONDITIONS

- A. Coordinate accessory locations, installation, and sequencing with other work to avoid interference and to assure proper installation, operation, adjustment, cleaning, and servicing of toilet accessory items.

1.09 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Coordinate locations, dimensions, and other pertinent details with installation of backing, blocking, and electrical connections.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design: Toilet accessories shall be manufactured by Bobrick Washroom Equipment, Inc., Clifton Park, NY; specified as the type, size and function as described in the Toilet Accessory Schedule.
- B. Products of the following manufacturers will be considered, providing their products equal or exceed the quality specified; and they can provide products of the type, size, function, and arrangement required:
 1. Bradley Corporation, Menomonee Falls, WI
 2. American Specialties Inc., Yonkers, NY

2.02 MATERIALS: TOILET ACCESSORIES

- A. Stainless Steel: ASTM A 666, Type 304, 0.0312-inch (0.8-mm) minimum nominal thickness, unless otherwise indicated.
- B. Brass: ASTM B 19 flat products; ASTM B 16 (ASTM B 16M), rods, shapes, forgings, and flat products with finished edges; or ASTM B 30, castings.

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- C. Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold rolled, commercial steel), 0.0359-inch (0.9-mm) minimum nominal thickness.
- D. Galvanized Steel Sheet: ASTM A 653/A 653M, with G60 (Z180) hot-dip zinc coating.
- E. Galvanized Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.
- F. Chrome Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).
- G. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.
 - 1. Provide tempered glass, where indicated.
- H. Galvanized Steel Mounting Devices: ASTM A153, hot dip galvanized after fabrication.
- I. Fasteners and Anchors: Non-corrosive, theft-resistant, screws, bolts and other fastening devices of same material as accessory unit or of galvanized steel where concealed.
 - 1. Provide mounting kits with stainless steel screws for accessories requiring same.
 - 2. Mounting kits shall include toggle nuts for hollow walls and expansion shields for solid walls. Provide 2 fasteners at each mounting plate.
 - 3. Provide 12 gauge, 3 inches wide, steel concealed anchor plates with tapped holes for installation of grab bars on walls constructed with metal studs.
 - 4. Provide concealed anchors for installation of grab bars on solid walls. Anchor assembly shall consist of tapped 12 gauge anchor plate, 10 gauge back plate, and 3/8 inch diameter thru-wall bolt.
- J. Keys: Provide universal keys for access to toilet accessory units requiring internal access for servicing and resupply.

2.03 INSTALLATION OF ACCESSORIES

- A. Fasteners, screws, and bolts: Type 304 stainless, tamperproof.
- B. Expansion shields: Fiber, lead or rubber as recommended by accessory manufacturer for component and substrate.

2.04 FABRICATION

- A. Recessed and modified surface mounted dispensing and disposal cabinets shall be constructed as follows:
 - 1. Exposed surfaces shall be of 22 gauge type 304 stainless steel with concealed stainless steel piano hinge on doors.
 - 2. There shall be 1/4 inch return on face trim.
 - 3. Each cabinet shall be provided with pin tumbler type locks (to match existing if possible) and two keys with the exception of the napkin vendors, which shall have door locks and coin box locks, keyed differently.
 - 4. Cabinets shall have a common fascia with grain on exposed surfaces, lapped in one direction to a #4 satin finish.
 - 5. Dispensers shall be equipped with sight or mechanical gauge for easier refill.
 - 6. Disposals shall be completely enclosed and removable plastic; waste receptacles shall be constructed of heavy duty polyvinyl.
- B. Framed Mirror Units, General: Fabricate frames for glass mirror units to accommodate wood, felt, plastic, or other glass edge protection material. Provide mirror backing and support system that will permit rigid, tamperproof glass installation and prevent moisture accumulation, as follows:
 - 1. Provide galvanized steel backing sheet, not less than 0.034 inch and full mirror size, with nonabsorptive filler material. Corrugated cardboard is not an acceptable filler material.
- C. Mirror Unit Hangers: Provide system for mounting mirror units that will permit rigid, tamperproof, and theft-proof installation, as follows:
 - 1. One piece, galvanized steel, wall hanger device with spring action locking mechanism to hold mirror unit in position with no exposed screws or bolts.
- D. Keys: Provide universal keys for access to toilet accessory units requiring internal access for servicing, resupply, etc. Provide minimum of 6 keys to Owner's representative.

2.05 FACTORY FINISHING

- A. Ferrous metals: Clean and treat, spray apply one coat of baked-on rust and moisture-resistant primer, followed by two coats of baked-on synthetic enamel, in selected colors. Ensure that finish coating is uniform in color intensity and degree of gloss, throughout.
- B. Chrome/Nickel Plating: ASTM 456, Type SC2, satin finish.
- C. Stainless steel: Number 4 satin finish, except as otherwise specified above under the Article entitled "Toilet Accessories".

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify that site conditions are ready to receive work and dimensions are as indicated on shop drawings.
- B. Beginning of installation means acceptance of existing conditions.

3.02 PREPARATION

- A. Deliver inserts and rough-in frames to site at appropriate time for building-in.
- B. Provide templates and rough-in measurements as required.
- C. Verify exact location of accessories for installation.

3.03 INSTALLATION

- A. Install accessories in accurate locations as noted on drawings; securely anchored to substrate surfaces.
- B. Install items in accordance with manufacturer's recommendation.
 - 1. Wall mounted items to be secured with devices suitable for the wall construction. Lead, plastic, wood, or fiber plugs are not acceptable.
 - 2. Accessories not located on drawings shall be installed where directed by the Architect.
 - 3. Provide theft resistant type exposed fasteners.
- C. Install accessories plumb, level, straight, and properly aligned with adjacent surfaces.
 - 1. Install accessory units to accommodate the physically handicapped, with operating areas of coin slots, openings for dispensers and waste not more than 40 inches above the floor.
 - 2. Mount grab bars at not greater than 36 inches above the floor, and anchor to comply with specified performance requirements. Install to withstand a downward load of at least 250 lbf, when tested according to method in ASTM F 446.
 - 3. Comply with ANSI A117.1 accessibility requirements.
- D. Accessories shall have concealed mounting and fastening devices for types of partitions as follows:
 - 1. Concrete masonry units: Integral anchors.
 - 2. Gypsum board and metal stud partitions: Screws or bolts secured to metal plates anchored to studs.
- E. Coordinate installation of accessories in toilet compartments and work of other trades to allow proper operation. Notify the Architect in case of conflict.

3.04 ADJUSTING AND CLEANING

- A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.
- B. Clean and polish all exposed surfaces in strict accordance with manufacturer's recommendations after removing temporary labels and protective coatings.

END OF SECTION

SECTION 31 00 00
EARTHWORK

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section includes the following:
 - 1. Stripping and stockpiling subgrade.
 - 2. Excavating and backfilling
 - 3. Topsoil and mulching
- B. Related Sections include the following:
 - 1. Section 01 50 00 – Temporary Facilities for temporary utility services, construction and support facilities, security and protection facilities.
 - 2. Section 03 30 00 – Cast-in-Place Concrete.

1.02 DEFINITIONS

- A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
 - 1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
 - 2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- C. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
 - 1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices.
 - 2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.
- D. Fill: Soil materials used to raise existing grades.
- E. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material that exceed 1 cu. yd. for bulk excavation or 3/4 cu. yd. for footing, trench, and pit excavation that cannot be removed by rock excavating equipment equivalent to the following in size and performance ratings, without systematic drilling, ram hammering, ripping, or blasting, when permitted:
- F. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- G. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, or topsoil materials.
- H. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow.
- I. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.03 MATERIAL OWNERSHIP

- A. Except for stripped topsoil and other materials indicated to be stockpiled or otherwise remain Government's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.04 SUBMITTALS

- A. Product Data: For the following:
 - 1. Each type of plastic warning tape.
 - 2. Geotextile.
 - 3. Controlled low-strength material, including design mixture.
- B. Samples: 12-by-12-inch Sample of separation geotextile.
- C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
 - 1. Classification according to ASTM D 2487 of each on-site and borrow soil material proposed for fill and backfill.
 - 2. Laboratory compaction curve according to ASTM D 698 for each on-site and borrow soil material proposed for fill and backfill.
- D. Topsoil, peat moss and plant fertilizer source and ph value.

1.05 QUALITY ASSURANCE

- A. Preexcavation Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 – Project Coordination.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Provide dry, loose topsoil for planting bed mixes. Frozen or muddy topsoil is unacceptable.

1.07 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Government or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated.
- B. Utility Locator Service: Notify Call Before You Dig for area where Project is located before site clearing.

PART 2 – PRODUCTS

2.01 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
- C. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
- D. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.

2.02 TOPSOIL AND MULCH

- A. Topsoil: Fertile, friable, natural topsoil of loamy character, without mixture of subsoil material, obtained from a well drained arable site, reasonably free of clay, lumps, coarse sands, stones, plants, roots, sticks and other foreign materials, with an acidity range of between pH 6.0 and 6.8.
 - 1. Identify source location of proposed topsoil
 - 2. Topsoil stripped from the site may be re-used on site.
- B. Mulch: Premium grade shredded cedar not larger than 3" in length and 1/2" in width, free of wood chips and sawdust.

2.03 GEOTEXTILES

- A. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefins or polyesters; with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
 - 1. Survivability: Class 2; AASHTO M 288.
 - 2. Grab Tensile Strength: 247 lbf; ASTM D 4632.
 - 3. Sewn Seam Strength: 222 lbf; ASTM D 4632.
 - 4. Tear Strength: 90 lbf; ASTM D 4533.
 - 5. Puncture Strength: 90 lbf; ASTM D 4833.
 - 6. Apparent Opening Size: No. 60 sieve, maximum; ASTM D 4751.
 - 7. Permittivity: 0.02 per second, minimum; ASTM D 4491.
 - 8. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

2.04 ACCESSORIES

- A. Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored as follows:
- B. Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:
 - 1. Red: Electric.
 - 2. Yellow: Gas, oil, steam, and dangerous materials.
 - 3. Orange: Telephone and other communications.
 - 4. Blue: Water systems.
 - 5. Green: Sewer systems.

PART 3 – EXECUTION

3.01 EXISTING UTILITIES

- A. Locate, identify, and disconnect utilities indicated to be abandoned in place.
- B. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Government or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Do not proceed with utility interruptions without Architect's written permission.

3.02 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

3.03 TOPSOIL STRIPPING

- A. Strip topsoil in a manner to prevent intermingling with underlying subsoil or other waste materials.

3.04 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and sub-surface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
 - 2. Remove rock to lines and grades indicated to permit installation of permanent construction:

3.05 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable.
 - 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to indicated lines, cross sections, elevations, and subgrades. Trim bottoms to required lines and grades to leave solid base to receive other work.

3.06 SUBGRADE INSPECTION

- A. Notify Architect when excavations have reached required subgrade.
- B. If Architect determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

3.07 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi, may be used when approved by Architect.
 - 1. Fill unauthorized excavations under other construction or utility pipe as directed by Architect.

3.08 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
 - 1. Surveying locations of underground utilities for Record Documents.
 - 2. Testing and inspecting underground utilities.
 - 3. Removing concrete formwork.
 - 4. Removing trash and debris.
 - 5. Removing temporary shoring and bracing, and sheeting.
 - 6. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.09 SOIL FILL

- A. Place and compact fill material in layers to required elevations as follows:
 - 1. Under grass and planted areas, use satisfactory soil material.
 - 2. Under footings and foundations, use engineered fill.
- B. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.10 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.11 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698:
 1. Under structures, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent.
 2. Under unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85 percent.
- D. Grading: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

3.12 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.13 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Government's property.

END OF SECTION