**Invitation for Bids for Storm Hardening at Edgewater Park Volunteer Fire Department**

**Bid Issuance Date**: June 14th, 2022  
**Pre-Bid Conference Date**: June 17th, 2022 – 2:00 PM EDT  
**Pre-Bid Site Visit Date**: June 23rd, 2022 – 12:00 PM EDT  
**Questions Due Date**: July 1st, 2022 – 2:00 PM EDT  
**Bid Submission Date & Opening**: July 13th, 2022 – 2:00 PM EDT  

**Bid Submission Notes**:  
Bidder must carefully read all instructions, requirements, and specifications. Bidder must ensure all forms are filled out properly and completely.  
Bids must be submitted electronically to:  
Email address: GOSRProcurement@stormrecovery.ny.gov  
Subject line: Bid Submission - Storm Hardening at Edgewater Park Volunteer Fire Department – IFB # GOSR-IFB-2022-01

**PROJECT FUNDING**: The Contract anticipated to be awarded pursuant to this IFB shall be funded, in whole or in part, with Federal grant monies. The selected Contractor shall be required to comply with the terms and conditions of the grant and applicable Federal, State, and local procedures, including, but not limited to, the Uniform Administrative Requirements and Cost Principles, codified at 2 C.F.R. Part 200.

<table>
<thead>
<tr>
<th>COMPANY NAME</th>
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<tr>
<td>TOTAL BID AMOUNT</td>
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This Invitation for Bid Cover Sheet must be complete and included with your Bid submission.
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INVITATION FOR BID: Storm Hardening at Edgewater Park Volunteer Fire Department – IFB # GOSR-IFB-2022-01

IMPORTANT NOTICE: A Restricted Period under the Lobbying Procurement Law is currently in effect for this procurement process and will remain in effect until approval of the Contract. Bidders are prohibited from Lobbying Procurement Law Contacts related to this procurement process with any employee of the Housing Trust Fund Corporation (“HTFC”), the Governor’s Office of Storm Recovery (“GOSR”), or its Affiliates, other than the Designated Contact Officer listed below.

Lobbying Procurement Law Designated Contact Officer:
Natalie Dennery
Lobbying Contact Officer
Governor’s Office of Storm Recovery
Email: GOSRProcurement@stormrecovery.ny.gov
Email subject: RE: Lobbying Inquiry

Pursuant to State Finance Law §§ 139-j and 139-k, this IFB includes and imposes certain restrictions on communications between GOSR and Bidders during the solicitation process. A Bidder is restricted from making contacts from the earliest notice of intent to solicit offers through final award and approval of the contract (the “Restricted Period”) with GOSR staff other than the Designated Contact Officer, unless it is a contact that is included among certain statutory exceptions set forth in State Finance Law § 139-j(3)(a).

In accordance with § 2879 of the Public Authorities Law, GOSR is required to make a responsibility determination with respect to each Contractor to whom a contract is to be awarded. The Lobbying Law requires that proposed Contractors disclose findings of non-responsibility against them by any other governmental agency within the previous four (4) years. Certain findings of non-responsibility can result in a rejection for contract award and, in the event of two (2) findings within a four-year period, the Bidder will be rendered ineligible (debarred) to submit a proposal for, or be awarded, any procurement contract for a period of four (4) years from the date of the second final determination of non-responsibility. Contacts by GOSR employees who are required to obtain information in furtherance of the Responsibility Determination are considered “permissible contacts” under the NYS Finance Law § 139 (j)(3)(a)(8). Further information about these requirements and HTFC’s Lobbying Procurement Law policies is available in HTFC’s Standard Clauses and Requirements for Solicitations, hyperlinked herein.
I. INTRODUCTION

The Governor’s Office of Storm Recovery (“GOSR”) of the Housing Trust Fund Corporation (“HTFC”) administers Federal grant funds from various sources, including but not limited to grants from the U.S. Department of Housing and Urban Development (HUD). All purchases made with grant monies shall comply with the terms and conditions of the grant, as well as the applicable Federal, State, and local procedures regarding these purchases. All Federal grant awards are subject to the Uniform Administrative Requirements and Cost Principles, codified at 2 CFR 200. This includes the standards for procurements under Federal grants, which applies to contracts for services, goods, construction, or repair. GOSR shall follow applicable local and State requirements except to the extent that these are inconsistent with Federal statutes, regulations, or grant conditions.

II. PURPOSE

GOSR seeks to procure Storm Hardening for the Edgewater Park Volunteer Fire Department in connection with its administration of U.S. Department of Housing and Urban Development (“HUD”) Community Development Block Grant-Disaster Recovery (“CDBG-DR”) funds appropriated by the Disaster Relief Appropriations Act, 2013 (Pub. L. 113-2). This Invitation for Bids (“IFB”) is issued in accordance with the Procurement and Contract Guidelines of GOSR and in compliance with New York State Finance Law.

GOSR is an Affirmative Action/Equal Opportunity Employer. Minority Business Enterprises, Small Business Enterprises, Women Business Enterprises, Service-Disabled Veteran Owned Businesses, Section 3 Business Concerns, and labor surplus area firms are encouraged to submit bids. Bidders are encouraged review the New York State Action Plan for Community Development Block Grant Disaster Recovery and all amendments thereto, as well as all Federal Register notices related to the CDBG-DR funds. The Action Plan and all amendments are located on the GOSR website at: http://stormrecovery.ny.gov/funding/action-plans-amendments.

III. TIMETABLE

A. PRE-BID TELECONFERENCE

A MANDATORY Pre-Bid Teleconference will be held via phone to discuss this IFB:

- Date: June 17th 2022
- Time: 2:00 PM EDT
- Dial-in Number: 267-807-9611
- Access Code: 688442

B. PRE-BID SITE VISIT

A Pre-Bid Site Visit will be held for this procurement:

- Date: June 23rd 2022
- Time: 12:00 PM EDT
INVITATION FOR BID: Storm Hardening at Edgewater Park Volunteer Fire Department – IFB # GOSR-IFB-2022-01

Location: Edgewater Park Volunteer Fire Department
1 Adee Drive, Edgewater Park, NY

Bidders are responsible for fully acquainting themselves with the conditions of the Project site (which may include more than one site), as well as those relating to the construction and labor of the Project, and for informing themselves with respect to local labor availability, means of transportation, necessity for security, laws and codes, local permit requirements, wage scales, local tax structure, contractors’ licensing requirements, availability of required insurance, and other factors that could affect the Work. It the responsibility of each Bidder to fully understand the facilities, difficulties and restrictions which may impact the cost or effort required to complete the Project. Existing restrictions and regulations will not be considered as grounds for any additional cost over the Contract sum.

The Successful Contractor will be expected to assume the risk of encountering any subsurface or other latent physical condition which can be reasonably anticipated on the basis of documentary information provided by the Construction Documents and from inspection and examination of the site.

C. INTERPRETATION OF DRAWINGS AND DOCUMENTS

Bidders unclear as to the true meaning of any part of the Drawings, Specifications or other proposed Contract Documents may submit to GOSR a timely written request for interpretation. The request must be no later than the deadline for Questions. Interpretation of the Drawings, Specifications or other proposed Contract Documents will be made only by a written Addendum. GOSR will not be responsible for any other explanation or interpretations of the proposed documents. If a prospective Bidder becomes aware of any errors or omissions in any part of the Contract Documents, it is the obligation of the prospective Bidder to promptly bring it to the attention of GOSR and in no case later than the deadline for Questions.

D. QUESTIONS

Prospective Bidders are strongly encouraged to check the “Procurement Opportunities” webpage frequently for updates and additional information pertaining to this IFB. All questions and correspondence must be sent to GOSRProcurement@stormrecovery.ny.gov. All questions must reference this specific IFB in the subject line of the email. For example, the subject line for questions related to this IFB should read Bid Question – Edgewater Firehouse. Any correspondence or questions sent to any other email address regarding this IFB will not receive a response.

It is the sole responsibility of the Bidder to check for any addenda and/or additional information on the “Procurement Opportunities” webpage: http://stormrecovery.ny.gov/doing-business-with-gosr/rfps

It is the responsibility of each Bidder to examine the entire IFB package, seek clarification in writing, and review their Bid for accuracy before submitting. It is the responsibility of each Bidder, before submitting a Bid, to:

1. Examine the Invitation for Bid Documents thoroughly;
2. Visit the site or structure to become familiar with conditions that may affect costs, progress, performance or furnishing of the Work; and
3. Take into account GOSR, Federal, State, and local laws, regulations, ordinances, and requirements that may affect costs, progress, performance, furnishing of the Work, or award.

The deadline for submission of questions relating to this IFB is **July 1st 2022 no later than 2:00 PM EDT**. All questions submitted in writing prior to the deadline will be compiled and answered in writing via an Addendum. A copy of all questions and answers via Addendum will be published online and/or forwarded in an email to all firms. GOSR will not be bound by any information conveyed verbally.

The submission of a Bid shall constitute an incontrovertible representation by Bidder that Bidder has complied with the IFB requirements and that without exception, the Bid is premised upon performing and furnishing the Work detailed in the Invitation for Bid Documents and that the provided documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

**E. ADDENDA**

Prior to the Bid submission deadline, GOSR may wish to amend, add to, or delete from the IFB or Contract Documents. GOSR may also issue clarifications resulting from any pre-bid conferences or questions submitted. In such situations, GOSR shall issue an Addendum to the IFB setting forth the nature of the modification. Once an Addendum is issued, all Bidders will be notified via email that an Addendum has been issued.

Please Note: Bidders are responsible for ensuring that they have received any and all Addenda.

**F. EXTENSIONS**

GOSR reserves the right to extend the bid due date and time prescribed above. However, unless GOSR issues a written Addendum to this IFB that extends the Bid due date and time for all Bidders, the bid due date and time prescribed above shall remain in effect.

**G. PUBLIC BID OPENING**

All bids will be opened at the time and place prescribed in this IFB, and the sealed Bids shall be opened publicly on **July 13th, 2022 – 2:00 PM EDT**. The public bid opening will take place on Zoom. Bidders can join one of two ways:

1. Join online: https://us06web.zoom.us/j/87338870499?pwd=THF3SGoxYS81cHBKU3J6RkNuSUtwZz09
   - Meeting ID: 873 3887 0499
   - Passcode: 766837

2. Join by phone: 1(646) 558-8656
   - Meeting ID: 873 3887 0499
   - Passcode: 766837

**H. SCHEDULE SUMMARY**

The following is the estimated timetable and is provided to assist responding Bidders in planning:
INVITATION FOR BID: Storm Hardening at Edgewater Park Volunteer Fire Department – IFB # GOSR-IFB-2022-01

<table>
<thead>
<tr>
<th>Description</th>
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</tr>
<tr>
<td>BID SUBMISSION DATE &amp; PUBLIC BID OPENING</td>
<td>July 13th, 2022 – 2:00 PM EDT NO EXCEPTIONS.</td>
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<tr>
<td>Notice to Proceed</td>
<td>Upon notice from GOSR</td>
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GOSR reserves the right to modify this schedule at its discretion. Notification of changes in connection with this IFB will be made available to prospective Bidders via electronic email. It is the sole responsibility of Bidders to periodically review the GOSR website for regular updates to the IFB which may alter the terms or requirements of this IFB.

I. ANTICIPATED CONTRACT TERM

Any contract that is awarded from the IFB is anticipated to be for an initial period of two (2) year(s) with three (3) one (1) year options, not to exceed a total contract term of five (5) years.

IV. SUBMISSION INSTRUCTIONS

A. BID & ADDENDA ACKNOWLEDGEMENTS

By submitting a Bid in response to this IFB, Bidders accept the solicitation process as it has been outlined in this IFB.

All bids are required to remain in effect for at least 120 days from the date of submission. This effective period should be taken into account when preparing the bid.

GOSR will not be liable for any costs incurred by the Bidder in preparing a response to this IFB. Bidders submit Bid(s) at their own risk and expense. GOSR makes no guarantee that any products or services will be purchased as a result of this IFB and reserves the right to reject any and all Bids. All Bids and accompanying documentation will become the property of GOSR. By submitting a Bid, Bidders acknowledge and accept that reference checks and/or background investigation may be conducted as a part of the due-diligence process. Award will be made to the lowest, responsible, and responsive Bidder who submits a response to this IFB.

In cases where Addenda are issued under this solicitation, Bidder must sign and submit the actual Addenda documents with their Bid. All Addenda shall become a part of the requirements for this IFB. In signing and submitting Addenda with its Bid, Bidder acknowledges that it has examined all documents, attachments, forms, specifications, addenda, and all instructions. GOSR may deem a bid non-responsive for failure of Bidder to acknowledge any and all Addenda.
Bidders are responsible for consulting the standards referenced in this IFB. Failure of Bidder to so examine and inform itself shall be at its sole risk, and no relief for error or omission will be given except as required under State law.

**READ THIS ENTIRE DOCUMENT CAREFULLY AND FOLLOW ALL INSTRUCTIONS. THE BIDDER IS RESPONSIBLE FOR FULFILLING ALL REQUIREMENTS AND SPECIFICATIONS.**

**B. BID SUBMISSION**

Bids must be submitted electronically as detailed below:

1. Bidders must submit ONE (1) complete Bid as ONE (1) PDF document.
2. Bids must be submitted by email to: GOSRProcurement@stormrecovery.ny.gov
3. Bidders must indicate for which contract opportunities the Bidder is submitting. For this IFB, the email subject shall indicate **Bid Submission for Edgewater Firehouse – Bid and Attachments**.
4. Bids must be delivered by email no later than the Bid submission deadline.

Bids that can only be viewed, downloaded, or otherwise accessed via file sharing, file hosting, or other file storage platforms will not be accepted.

Bid font size shall not be any less than 12 point, with 1-inch margins, with the exception of tables and charts, but such text must be clearly legible. Bidders are encouraged to submit only relevant and necessary information. The Bidder shall not make any aspect of its submission contingent upon the use of State of New York personnel, property, or equipment.

GOSR will consider Bids to this IFB which are submitted in a consistent and easily comparable format. Bids not organized in the manner set forth in this IFB may be considered nonresponsive at the sole discretion of GOSR. Bidders should not refer to other parts of their submission to information that may be publicly available elsewhere, or to the Bidder’s website or any other website, in lieu of presenting the information in the Bid.

It is the responsibility solely of Bidder to see that its Bid is properly submitted in proper form and prior to the stated closing time. GOSR will only consider bids that have transmitted successfully. Bidders shall be solely responsible for informing themselves with respect to the accepted bid submission method, for ensuring the capability of their computer system to upload the required documents, and for the stability of their internet service. Failure of the Bidder to successfully submit an electronic Bid shall be at the Bidder’s sole risk, and no relief will be given for late and/or improperly submitted Bids.

**C. DIGITAL FORMAT**

GOSR will accept Bids in digital format. Bids must be submitted via email to GOSRProcurement@stormrecovery.ny.gov.

Submissions of this IFB must be filed electronically in Portable Document Format (pdf) file. Unless otherwise noted, Bidders must complete and submit all forms, information, and other documentation listed herein (including, without limitation, any Attachments and Appendices to this IFB) as part of their electronic submissions. Bidder is responsible to ensure that emails and attachments are delivered in a legible format.
Only complete and responsive Bids will be evaluated. In all instances, GOSR’s determination regarding the completeness/responsiveness of any Bids shall be final.

If, in its Bid response, Bidder makes any changes whatsoever to GOSR’s published IFB specifications, GOSR’s IFB specifications, as published, shall control. Furthermore, if a Bidder has been found to have made an alteration of any kind to GOSR’s published IFB specifications, or the work under the Contract is not being performed, the Contract is subject to immediate cancellation.

D. LATE BIDS; BID RETURNS

Bids are due to the GOSR Procurement Department by the date and time specified on the cover sheet and as listed under Section II - Timetable. GOSR will not accept late bids. Late bids will be rejected. If a solicitation is cancelled, submitted bids will not be returned.

E. SCANNED OR RE-TYPED RESPONSE

If in its response, Bidder either electronically scans, re-types, or in some way reproduces the GOSR’s published IFB package, then in the event of any conflict between the terms and provisions of GOSR’s published IFB package, or any portion thereof, and the terms and provisions of the response made by Bidder, the GOSR’s IFB package as published shall control. Furthermore, if an alteration of any kind to the GOSR’s published IFB package is only discovered after the Contract is executed and is or is not being performed, the Contract is subject to immediate cancellation.

F. PRICING

Bidder must provide the pricing as requested for all services and/or items specified within the Bid Schedule (Attachment A). Pricing must be all-inclusive. No price or rate changes, additions, or subsequent qualifications will be honored during the course of the Contract.

Any rates provided to GOSR must be all-inclusive. “All-inclusive” shall be construed as costs incorporating all charges for service, labor, material, equipment, overhead, and any other costs. No separate line item rates or charges for services listed in the scope of work will be accepted.

G. BID BOND

If the Contract is for the construction of public works, or the Contract value is anticipated to exceed $100,000. Bid bonds must be submitted with the Bid package:

1. Bidder must furnish a good and sufficient bid guarantee in the amount of five (5) percent of the total Contract price.

2. The bid guarantee shall consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument as assurance that the Bidder will, upon acceptance of its bid, execute such contractual documents as may be required within the time specified.

3. The bid bond must be executed with a surety company authorized to do business in this State.

H. REQUIRED BID DOCUMENTS

Bidder’s IFB submission package must include the components checked below, in the order in which they are listed. If the item is “X” checked, the item must be included in Bidder’s submission in order for the submission
to be considered complete. Bidders are asked to review the documentation to ensure all applicable parts are included. If any portion of this IFB or its attachments are missing, notify the Purchasing Department immediately. Bidder should be thoroughly familiar with all of the following items applicable to the bid submission before submitting a bid:

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
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<tbody>
<tr>
<td>☒</td>
<td><strong>IFB Cover Sheet</strong> – Bidder must complete and submit the <em>Invitation for Bid Cover Sheet</em>, providing its Company Name and Bid amount.</td>
</tr>
<tr>
<td>☒</td>
<td><strong>Bid Schedule</strong> – Bidder must complete and submit the <em>Bid Schedule</em>, included as Attachment A.</td>
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<tr>
<td>☒</td>
<td><strong>Bid Bond</strong> – If contract value exceeds $100,000, Bidder must furnish a good and sufficient bid guarantee in the amount of five (5) percent of the total contract price.</td>
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<td><strong>Contractor Responsibility Questionnaire</strong> – Contractor Responsibility Questionnaire for Bidder and its proposed subcontractors, which can be found at <a href="http://www.osc.state.ny.us/vendrep/forms_Contractor.htm">http://www.osc.state.ny.us/vendrep/forms_Contractor.htm</a>. Select the questionnaire that best matches the business type (either For-Profit or Not-For-Profit) and business activity (Construction or Other). Do not send the completed form to the Office of the State Comptroller (OSC) unless specifically requested.</td>
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<td><strong>Certification Regarding Lobbying</strong> – Bidder must sign and submit the <em>Certification Regarding Lobbying</em> form.</td>
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<td><strong>Statement of Conflicts</strong> – A statement of conflicts (if any) the Bidder or key employees may have regarding this Project.</td>
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<td><strong>Respondent Overview &amp; Certification</strong> – Bidder must sign and submit this form.</td>
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<td><strong>Affirmation of Understanding of and Agreement Pursuant to State Finance Law §139-j (3) and §139-j (6)(b)</strong> – Bidder must sign and submit this form.</td>
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<tr>
<td>☒</td>
<td><strong>Offeror Disclosure of Prior Non-Responsibility Determinations</strong> – Bidder must sign and submit this form.</td>
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<td>☒</td>
<td><strong>Non-Collusive Bidding Certification</strong> – Bidder must sign and submit this form.</td>
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| ☒ | **Diversity Forms** – Bidder must complete and submit all required diversity forms  
  - Equal Employment Opportunity Staffing Plan (PROC-1)  
  - MWBE Utilization Plan (PROC-2)  
  - Equal Employment Opportunity Statement (PROC-8)  
  - SDVOB Utilization Plan |
V. EVALUATION & AWARD PROCEDURES

A. NONCONFORMING BIDS

Bids that are incomplete, contain material irregularities or include alterations to or terms and conditions that do not conform to the terms and conditions of the IFB, or otherwise do not comply with the requirements of the IFB are subject to rejection as non-responsive. In accordance with New York State Finance Law, GOSR reserves the right to waive any informality or irregularity, to make awards to more than one Bidder, and/or to reject any or all bids if there is a sound documented reason.

B. EVALUATION PROCESS

GOSR will select the responsive and responsible Bidder that, in the opinion of GOSR, has been determined to have submitted the lowest bid based on all identified factors.

Prices proposed by Bidder shall be irrevocable until Contract award unless the bid is withdrawn. A Bid may be withdrawn by a Bidder, provided an authorized representative of the Bidder submits a written request to withdraw the Bid prior to the time set for opening the Bids.

C. BASIS OF AWARD

Award will be made to the lowest, responsible, and responsive Bidder who submits a response to this IFB. GOSR shall evaluate Bids in response to this solicitation, and intends to award a firm fixed price contract to the responsive and responsible bidder, whose Bid, considering price and any price-related factors specified in the solicitation, is the lowest.

Where specified in these bidding documents, factors such as discounts, transportation cost, and life cycle costs shall be considered in determining which bid is lowest. Payment discounts will only be used to determine the low bid when prior experience indicates that such discounts are usually taken advantage of.

D. UNBALANCED BID

To the extent applicable, GOSR may reject any Bid as nonresponsive if it is materially unbalanced as to the prices for the various items of work to be performed. A Bid is “materially unbalanced” when it is based on prices significantly less than cost for some work and prices which are significantly overstated for other work.

E. CONTRACT OBLIGATION

Binding agreements shall remain in effect until all products and/or services covered by this procurement have been satisfactorily delivered and accepted. This IFB does not obligate GOSR to the eventual purchase of any services described, implied or which may be proposed. Progress toward this end is solely at the discretion of GOSR and may be terminated at any time prior to execution of a contract.

F. RESPONSIBILITY
GOSR shall award contracts only to responsible Bidders who have the ability to perform successfully under the terms and conditions of the proposed contract. Information provided by the Bidder may be used, in part, by GOSR to assess Bidders’ responsibility.

To be considered responsible, a Bidder must:

- Have adequate financial resources to perform the contract, or the ability to obtain them;
- Be able to comply with the required or proposed delivery or performance schedule, taking into consideration all existing business commitments;
- Have a satisfactory performance record;
- Have a satisfactory record of integrity and business ethics;
- Have the necessary organization, experience, accounting and operational controls, and technical skills, or the ability to obtain them;
- Have the necessary production, construction, and technical equipment and facilities, or the ability to obtain them; and
- Be otherwise qualified and eligible to receive an award under applicable laws and regulations.

Before being considered for award, the Bidder may be requested by GOSR to submit a statement or other documentation regarding any of the items above. Failure by the Bidder to provide such additional information shall render the Bidder nonresponsive and ineligible for award.

Responsible Bidders must have the experience necessary to complete the Scope of Work and ability to comply with New York and GOSR requirements and all Federal codes, policies and regulations applicable to this project.

GOSR shall conduct research to determine that a Bidder is responsible. Some methods to determine responsibility include:

- Compliance with Delivery and Performance Schedules: GOSR may request information on other active contracts the Bidder is performing and verify the status with those buyers;
- Performance Record: GOSR may require Bidders to submit contact information for recent contracts they have performed for other customers and contact them to ascertain the Bidder’s quality of performance, including timeliness of delivery/completion, quality of work, compliance with terms and conditions of the contract, and cost control, if applicable.
- Integrity and Business Ethics: GOSR may check local offices of Code Compliance and Business Licenses or other regulatory agencies for business ethics record and compliance with public policy. GOSR may verify the Bidder’s compliance with payments, wage rates, and affirmative action requirements with other customers and with applicable State and Federal Government offices, e.g., DOL Wage and Hour Division;
- Necessary Organization, Experience, Operational Controls, and Technical Skills: GOSR may verify experience with other customers, request copies of audits, or verify that necessary personnel
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will be available to work on GOSR’s contract;

- Necessary Production, Construction, and Technical Equipment and Facilities: GOSR may request evidence that the Bidder has all the equipment and facilities he/she will need or the capability to obtain them; and
- System for Award Management: GOSR shall verify that the Bidder is not debarred through the System for Award Management (www.SAM.gov).

Bidders are responsible for determining the responsibility of their prospective subcontractors. Bidders shall be required to provide information on any prospective subcontractors to be used in completion of the Project. Determinations of prospective subcontractor responsibility may affect GOSR’s determination of the Bidder’s responsibility. A Bidder may be required to provide written evidence of a proposed subcontractor’s responsibility.

GOSR may directly determine a prospective subcontractor’s responsibility. In this case, the same standards used to determine a Bidders responsibility shall be used by GOSR to determine subcontractor responsibility.

VI. STATEMENT OF WORK

The successful Bidder shall perform the Statement of Work to the extent necessary (a) for the proper execution and completion of the Work under the Contract; (b) to supervise and direct the Work in a safe manner and perform all Work in accordance with the Contract, applicable law, applicable permits and industry standards; (c) to achieve Final Completion of the project; and (d) in conformance with the Contract Documents and the Technical Specifications and such that the Work is in compliance with the Contract, industry standards, applicable codes, applicable laws and applicable permits.

The successful Bidder is responsible for identifying, coordinating, and conforming scope, specifications, and recommendations of assigned project(s) to meet legal and regulatory parameters/constraints, codes and applicable requirements set forth by agencies, including, but not limited to the State of New York, the U.S. Environmental Protection Agency (EPA), the Federal Emergency Management Agency (FEMA), the New York State Department of Environmental Conservation (DEC), the New York State Department of Labor (NYSDOL), and any other local codes or agencies as they may apply.

A. SCOPE

The scope of this project shall include furnishing all qualified personnel, supervision, labor, services, materials, equipment, facilities, travel, overhead and incidentals necessary for Storm Hardening of the Edgewater Park Volunteer Fire Department. The work to be performed by the Bidder for this project shall include, but is not limited to:

1. Construction services for Storm Hardening of the Edgewater Park Volunteer Fire Department.
2. New windows installed throughout the entire building.
3. Improvements to the roof and building envelope that includes new roofing, flashings, and waterproofing.
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4. Installation of a backup generator to provide emergency power and allow the facility to serve as a shelter during emergencies. The generator will be of sufficient capacity to provide accessory usage for emergency equipment

5. Upgraded HVAC installed in the community center

6. Complete renovation of the community center, including modern lighting, finishes, upgraded HVAC, and ADA-compliant bathrooms so that the facility can function as a generator-driven emergency shelter and build community resilience.

7. Furnish and install construction signage per Appendix G “Construction Signage Requirements”

8. The contractor shall perform all contract work such that on-going use of the firehouse remain unaffected and shall be operational at all times. This shall include all MEP systems, access to egress points, or otherwise approved in the site logistics plans.

9. Warranty period shall not be less than one (1) year, to include labor and materials.

Bidders must refer to all attachments, including the Standards & Specifications and Plans & Drawings for further details and information.

B. STANDARDS & SPECIFICATIONS

Applicable standards and specifications required under this IFB are included under the Standards & Specifications attachment:

1. Technical Specifications
2. Environmental Inspection Report

It is the responsibility of the Bidder to ensure that each worker provided by the Bidder shall be fully trained and qualified to provide any assigned work. Accordingly, all work provided shall be guaranteed by the Bidder to be performed in a workmanlike, skillful, and competent manner and in accordance with all applicable laws, codes, and/or regulations, including those issued by, but not limited to, the State of New York (and/or, if applicable, any city jurisdiction therein in which work will be performed) and/or any applicable Federal laws, codes, and regulations.

C. PLANS & DRAWINGS

Applicable plans and drawings pertinent to this IFB are included under the Plans & Drawings attachment:

a. Approved GC.FO- X00735640-I1
b. Electrical Drawings
c. Approved Mechanical Plans X00736087-I1
d. Approved Plumbing Plans- X00736306-I1
e. Fire Alarm Plans

D. COMMENCEMENT OF SERVICES

The Successful Bidder must be prepared to commence these services within thirty (30) days of the issuance of a Task Order, at the direction of GOSR.
E. TIME FOR PERFORMANCE

Time is of the essence in the performance of the Work. Upon issuance of the Notice To Proceed (NTP), the Successful Bidder will have three (3) days to commence initiation of work and a maximum of six (6) months from NTP to Complete all Work required by the Contract Documents to the satisfaction of the GOSR Project Manager, Engineer and Authority(ies) Having Jurisdiction, as well as written acceptance from GOSR and its designees. Work milestones provided below:

<table>
<thead>
<tr>
<th>Deliverable</th>
<th>Completion Milestone Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commencement of Work (NTP plus three (3) days)</td>
<td>August 15, 2022</td>
</tr>
<tr>
<td>Substantial Completion (complete all scopes of work, and pass all controlled inspections)</td>
<td>December 13, 2022</td>
</tr>
<tr>
<td>Work Order Closeout: Complete Punchlist, obtain all authority having jurisdiction sign-offs, in order to complete final requisition of services</td>
<td>February 11, 2023</td>
</tr>
</tbody>
</table>

F. SITE ACCESS

The Work described in Section VI – Statement of Work will be conducted at locations and entities under an Agreement with the Governor’s Office of Storm Recovery. The Successful Bidder, in coordination with GOSR, will be responsible for scheduling access to the project location(s) and will work directly with the GOSR Project Manager to ensure that all necessary preparations and access to the project location(s) are made in accordance with the approved project construction schedule.

G. CRITICAL PATH METHOD (CPM) SCHEDULE REQUIREMENTS

A detailed Baseline construction schedule utilizing the Critical Path Method, with appropriate work breakdown structure to coordinate all trade work, is required to be submitted by the awarded Contractor fourteen (14) calendar days following award. Schedule updates indicating original baseline and revised actual schedule must be submitted, when one of the following occurs:

- The schedule experiences delay or acceleration
- Once (1) every 30 calendar days
- At the discretion of the GOSR Project Manager.

H. KEY DELIVERABLES

The Key Deliverables to be provided by the Successful Contractor shall include the following:

1. Phasing Plan
2. Submit a site security and logistics plan indicating work sequencing, staging, delivery and storage area(s) for Project Manager approval, within ten (10) days following award.
3. Baseline CPM Schedule and Updates - baseline schedule with monthly updates, listing all inspections, and coordination of work. Baseline schedule must be submitted and approved by the GOSR Project Manager prior to on-site construction start for each project.

4. Project Specific Site Health and Safety Plan (HASP) shall be submitted within fifteen (15) days of NTP and prior to any work beginning for each project.

5. Contractor Submittals and Requests for Information shall be submitted timely by the Contractor and must be included in the schedule.

6. Reporting of daily field activity, fabrication progress including count of labor force by trade classification, material lead times, deliveries and installation metrics, and notification of inspections and when work is completed.

7. Successfully coordinate, request, and pass all progress, quality, and final inspections as required by governing agencies noted on bid documents, including but not limited to the Authority(ies) Having Jurisdiction, municipality(ies), Engineer of Record, and GOSR Project Manager.

I. ELECTRONIC PROJECT MANAGEMENT

GOSR utilizes an Oracle Primavera based project controls system. By submitting its bid, Bidder commits to comply with reporting, data provision, updating and other requirements of the program at the direction of project manager and GOSR program controls personnel. This includes weekly reporting on status of projects, significant milestone progress reporting and other information regarding the progress of the work. Failure to comply with reporting requirements may result in a delay of payment until remedied.

VII. GENERAL PROVISIONS

1. AUTHORIZATION TO DO BUSINESS IN NEW YORK

All Bidders are required to have and maintain any licenses, certifications, and registrations required by the State of New York, GOSR, or municipality in which the work takes place, or as required by recognized professional organization governing the services performed under this contract (such as professional licensing requirements i.e. licensed plumbers).

A Sole Proprietorship, General Partnership, and all business entities (SP, LLC, INC, etc.) doing business under a name other than the name of the owner requires a DBA (Doing Business As) Certificate, which must be filed within the state or locality in which they are doing business. If a Bidder’s business isn’t located in New York, Bidders must submit the licenses, certifications, and other documentation required by the locality in which their business is based.

2. PERFORMANCE & PAYMENT BONDS

(Applicable to construction and facility improvement contracts exceeding $100,000)

The Contractor shall comply with New York State bonding requirements under Section 137 of the State Finance Law, which requires the following minimum bonding requirements:

- A performance bond on the part of the Contractor for 100 percent of the contract price. A “performance
bond” is one executed in connection with a contract to secure fulfillment of all the Contractor’s obligations under such contract.

- A payment bond on the part of the Contractor for 100 percent of the contract price. A “payment bond” is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and material in the execution of the work provided for in the contract.

3. COMPLIANCE WITH STATE, FEDERAL, AND LOCAL LAWS

Bidders should refer to Appendix I – Federal Contract Provisions and Appendix II – Standard Clauses for Contracts with HTFC for more detailed information on the requirements and regulations applicable to this contract opportunity:

- New York State Finance Law
- New York State Executive Law
- New York State Economic Development Law
- New York State Public Authorities Law
- New York State Labor Law
- 2 CFR 200 – Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards
- 24 CFR Part 570 – Community Development Block Grants

Bidder shall follow all Federal, State, and local laws, rules, codes, ordinances, and regulations applicable to Bidder’s services.

GOSR operates its business ethically and in compliance with the law. We ask that any Bidder or Bidder’s employee doing business with GOSR who believes he or she has witnessed any suspected ethical violation or fraud immediately report the allegations to:

Toll-Free Telephone: 855-861-0003
E-mail: fraud@stormrecovery.ny.gov (must include company name with report)
Fax: (215) 689-3885 (must include company name with report)
For Free Interpretation/Language Assistance: 1-844-694-7163

All suspected criminal conduct will be investigated and reported to the appropriate law enforcement agency. Bidders who report suspected ethical violations or fraud can do so without fear of retaliation. Retaliating against any Bidder or Contractors for reporting suspected ethical violations or fraud is strictly prohibited.

By submitting this Bid, neither contractor nor any substantially owned or affiliated person, firm, partnership or corporation has participated or is participating or shall participate in an international boycott in violation of the provisions of the United States export administration act of nineteen hundred sixty-nine, as amended, or the
export administration act of nineteen hundred seventy-nine, as amended, or the regulations of the United States department of commerce promulgated thereunder.

4. DISQUALIFICATION OF BIDDER

Upon signing its Bid, Bidder certifies that Bidder has not violated the antitrust laws of this State or of Federal antitrust laws. Any or all bids may be rejected if GOSR believes that collusion exists among Bidders. If multiple bids are submitted by a Bidder and after the bids are opened, one of the bids is withdrawn, the result will be that all of the bids submitted by that Bidder will be withdrawn; however, nothing herein prohibits Bidders from submitting multiple bids for different products or services.

5. FUNDING

GOSR anticipates that all or partial funding for the project subject to this IFB will consist of Federal grant funding. The Federal agencies providing this funding may include, but shall not be limited to, the U.S. Department of Housing and Urban Development (HUD). As such, Bidder acknowledges and is responsible for ensuring compliance with the general procurement standards applicable to Contractors, as detailed in 2 C.F.R. 200. Any Contract awarded pursuant to this IFB shall include all required Contract clauses in all solicitation and contract awards for services and work associated with this project, and the selected Bidder shall include the applicable clauses in its subcontracts (see Appendix I – Federal Contract Provisions).

Additionally, any contract entered into by GOSR that is to be paid in whole or in part from grant funds will be subject to termination for convenience by GOSR should grant funding become unavailable at any time for the continuation of services paid for by the grant, and further funding cannot be obtained for the contract. Such termination will be without liability to GOSR, other than for payment of services rendered prior to the date of termination.

6. SECTION 3 ACT OF 1968 COMPLIANCE

Bidder acknowledges and is responsible for ensuring compliance with Section 3 of the Housing and Urban Development Act of 1968 (12 U.S.C. 1701u) (“Section 3”). The purpose of Section 3 is to ensure that economic opportunities, most importantly employment, generated by certain HUD financial assistance shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly those who are recipients of government assistance for housing or residents of the community in which the Federal assistance is spent.

The implementing regulations for Section 3 are found at 24 C.F.R. 75.

24 C.F.R. 75.19(a) requires that, to the greatest extent feasible, and consistent with existing Federal, State, and local laws and regulations, contractors and subcontractors shall ensure that employment and training opportunities arising in connection with Section 3 projects are provided to Section 3 workers within the metropolitan area (or nonmetropolitan county) in which the project is located.

Where feasible, priority for employment opportunities and training should be given to:

1. Section 3 workers residing within the service area or the neighborhood of the project, and
2. Participants in YouthBuild programs.
24 C.F.R. 75.19(b) requires that, to the greatest extent feasible, and consistent with existing Federal, State, and local laws and regulations, contractors and subcontractors shall ensure contracts for work awarded in connection with Section 3 projects are provided to business concerns that provide economic opportunities to Section 3 workers residing within the metropolitan area (or nonmetropolitan county) in which the project is located.

Where feasible, priority for contracting opportunities should be given to:

1. Section 3 business concerns that provide economic opportunities to Section 3 workers residing within the service area or the neighborhood of the project, and

2. YouthBuild programs.

Contractors or subcontractors that employ Section 3 workers must maintain documentation to ensure that workers meet the definition of a Section 3 worker or Targeted Section 3 worker, at the time of hire or the first reporting period. Please refer to 24 C.F.R. 75.31 regarding acceptable documentation for a Section 3 worker or Targeted Section 3 worker.

Bidders must complete and submit the Section 3 Utilization Plan & Statement of Compliance (See Bid Forms – Article 41) with their Bid. The Section 3 Utilization Plan & Statement of Compliance should detail the Bidder’s goals to hire new Section 3 residents and/or subcontract with Section 3 Business Concerns. Bidders should indicate all firms proposed as subcontractors on this project, and whether any of the firms are Section 3 Business Concerns. Section 3 Business Concerns can be found on the HUD Section 3 website at https://portalapps.hud.gov/Sec3BusReg/BRegistry/What.

Businesses which fit the definition of a Section 3 Business Concern, and would like to self-perform in order to comply with Section 3 requirements, must submit Section 3 Self-Certification documentation. At GOSR’s discretion, GOSR may accept the GOSR Section 3 Business Concern Self-Certification, or equivalent Section 3 Self-Certification forms from HUD, or other Section 3 programs in the Bidder’s local jurisdiction.

7. MWBE UTILIZATION AFFIRMATIVE STEPS

2 C.F.R. 200.321 requires that Contractors take all necessary affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible. Contractors are required to facilitate Historically Underutilized Business (HUB) and/or Minority & Women-Owned Business Enterprise (MWBE) participation. Affirmative steps must include:

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

2. Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;

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

4. Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises; and

5. Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce.
GOSR shall monitor and evaluate the successful Contractor’s MWBE compliance throughout the contract period. Upon award, successful Contractor shall be responsible for providing reports in the format and frequency required by GOSR.

8. NEW YORK EXECUTIVE LAW ARTICLE 15-A - PARTICIPATION BY MINORITY GROUP MEMBERS AND WOMEN WITH RESPECT TO STATE CONTRACTS

GOSR is committed to awarding contracts minority and women-owned business enterprises (“MWBEs”) and to firms that are dedicated to diversity and provide high-quality services. GOSR strongly encourages firms that are certified as MWBEs by the State’s Empire State Development (“ESD”) to submit responses to this IFB.

GOSR strongly encourages joint ventures of MWBE firms with majority firms and with other MWBE firms.

GOSR is committed to achieving significant MWBE participation in its contracts and will use good faith efforts to ensure that qualified MWBE firms are included in the selection of firms to provide the above described services. For purposes of this solicitation, HTFC hereby establishes an overall goal of 30% for MWBE participation - 15% for New York State certified minority-owned business enterprises (“MBE”) participation and 15% for New York State certified women-owned business enterprises (“WBE”) participation (based on the current availability of qualified MBEs and WBEs). A Contractor who is selected for the subject Contract must document its good faith efforts to provide meaningful participation by MWBEs as subcontractors or suppliers in the performance of the Contract and the Contractor agrees that GOSR may withhold payment pending receipt of the required MWBE documentation. The directory of MWBEs can be viewed at: https://ny.newnycontracts.com. For guidance on how GOSR will determine a Contractor’s “good faith efforts,” refer to 5 NYCRR §142.8.

Bidders that are not MWBEs are strongly encouraged to consider partnering, or making other joint venture arrangements, with certified MWBE firms to achieve the prescribed goals and to give M/WBE firms the opportunity to participate in the above-described services performed under the contract(s) awarded to the successful Bidder(s).

Include the following in the Bidder’s submission:

1. If the Bidder is a New York State-certified M/WBE firm, provide documentation evidencing registration. For M/WBE firms that are not certified but have applied for certification, provide evidence of filing, including the filing date.

2. A description of the instances, if any, in which the Bidder has worked with M/WBE firms on previous transactions by engaging in joint ventures or other partnering or subcontracting arrangements. Submissions should include the nature of the engagement, how such arrangement was structured, and a description of how the services and fees were allocated.

3. A statement of the Bidder’s willingness, if any, to engage in M/WBE partnering or mentoring arrangements with an M/WBE firm selected by the Bidder. Such statement should include an explanation of how the Bidder would suggest structuring such an arrangement and allocating services and fees between the firms participating in the arrangement.

4. Provide a plan for ensuring the participation of minority group members and women in accordance
INVITATION FOR BID: Storm Hardening at Edgewater Park Volunteer Fire Department – IFB # GOSR-IFB-2022-01

with the Participation by Minority Group Members and Women Requirements and Procedures for Contracts with HTFC, attached hereto as Appendix II – Standard Clauses for Contracts with HTFC.

For assistance identifying MWBE partners, review the NYS MWBE Directory of Certified Firms. Upon award, successful Contractor shall be responsible for providing reports in the format and frequency required by GOSR.

9. NEW YORK EXECUTIVE LAW ARTICLE 17-B. PARTICIPATION BY SERVICE-DISABLED VETERANS WITH RESPECT TO STATE CONTRACTS

GOSR is committed to awarding contracts to service-disabled veteran-owned business (“SDVOBs”) that provide high-quality services. HTFC strongly encourages firms that are certified as SDVOBs by the State’s Office of General Services (“OGS”), to submit responses to this IFB.

GOSR is committed to achieving significant SDVOB participation in its contracts and will use good faith efforts to ensure that qualified SDVOB firms are included in the selection process. Bidders for this IFB and any subsequent contracts will be strongly encouraged and expected, to the maximum extent practical and consistent with the legal requirements of the State Finance Law and the Executive Law, to use responsible and responsive SDVOBs in the fulfillment of the requirements of the contract that are of equal quality and functionality to those that may be obtained from non-SDVOBs. A Contractor who is selected for the subject Contract must document its good faith efforts to provide meaningful participation by SDVOBs in the performance of the contract and the Contractor agrees that GOSR may withhold payment pending receipt of the required SDVOB documentation.

For assistance identifying SDVOB partners, refer to the Directory of New York State Certified Service-Disabled Veteran-Owned Businesses. Upon award, successful Contractor shall be responsible for providing reports in the format and frequency required by GOSR.

10. MINIMUM EFFECTIVE PERIOD OF BID

All bids are required to remain in effect for at least 120 days from the date of submission. This effective period should be taken into account when preparing the bid.

11. SUPPLEMENTAL MATERIALS

Bidders are responsible for including all pertinent product data in the returned bid package. Literature, brochures, data sheets, specification information, completed forms requested as part of the bid package and any other facts which may affect subsequent contract award should be included. Failure to include all necessary and proper supplemental materials may be cause to reject the entire Bid.

12. BRAND NAMES / SUBSTITUTION

Brand names and model numbers that may appear in the documents of this IFB are for reference only and shall serve as an example of functional, design, and/or quality standards and requirements for the product or service identified. It is not the intent of GOSR to restrict bids in such cases, but rather to establish a desired quality or level of merchandise or to meet a pre-established standard due to existing items. Herein, or within the attached specifications, whenever GOSR has listed a specific brand name, the words “or equal” shall automatically apply thereto. This term “or equal” means that Contractor may propose to provide an alternate product as long as such proposed alternate product, in the opinion of GOSR, meets the minimum specifications.
If Bidder wishes to provide a different product than the product GOSR has identified within this IFB, Bidder may propose different products or items within their Bid submission, provided the products or items provide the same essential characteristics and are of equal or better quality. The burden of proof of such rests with Bidders. GOSR shall act as sole judge in determining equality and acceptability of products offered. After opening of bid, but prior to award recommendation, GOSR may require documentation demonstrating equal or superior products as compared to products required.

13. REGULATORY REQUIREMENTS & PERMITS

Bidders awarded pursuant to this IFB shall comply with all applicable Federal, State, and local laws, rules, regulations, ordinances, and codes and shall identify, prepare and/or obtain all licenses, documentation, coordination, testing, inspections, plans, reports, forms, and permits required to provide the services under this IFB and as required by Local, State, and Federal Agencies, Departments, Boards, and Commissions at his/her own expense. Bidder shall be responsible for supplying necessary reports and studies (if applicable) to the agencies as required and provide responses to their comments, as necessary.

14. CONFLICTS OF INTEREST

Prior to responding to this IFB, the Bidder must perform a conflict of interest inquiry and disclose to GOSR in its bids of any and all potential conflicts of interest that exist or may exist for its organization and/or subcontractors or affiliates in relation to the scope of work contained in this document.

In the event of real or apparent of conflicts of interest, GOSR reserves the right to impose additional conditions upon Bidders. The successful Contractor will be subject to the provisions on conflicts of interest set forth in section 74 of the New York State Public Officers Law. Contractor shall immediately inform GOSR in writing of actual or potential conflict of interest that arises under a contract. GOSR reserves the right to cancel any contract awarded pursuant to this IFB upon thirty (30) days written notice in the event that an actual conflict of interest, or the appearance of such conflict, is not cured to GOSR’s satisfaction.

15. FEDERAL PROVISIONS & REQUIREMENTS

Because the Contract is being funded with Federal funds, the Contract shall be governed by certain Federal terms and conditions for Federal grants, attached hereto as Appendix I of the IFB. Submission of a Bid shall affirmatively represent and certify that the Bidder understands and shall adhere to all applicable Federal requirements. Any funds disallowed by any Federal government entity shall be disallowed from the fee or compensation to Contractor.

Upon award, successful Contractor shall be responsible for providing reports in the format and frequency required by GOSR to maintain its compliance with its funding sources.

16. STANDARD CLAUSES FOR CONTRACTS WITH HTFC

Because the Contract will be between the Bidder and HTFC, the contract shall be governed by certain standard HTFC terms and conditions, attached hereto as Appendix II of the IFB Appendices. Bidder shall provide a description of experience with such requirements and affirmatively represent and certify that the Bidder shall adhere to the terms and conditions set forth at Appendix II, and any subsequent changes deemed appropriate by HTFC.
INVITATION FOR BID: Storm Hardening at Edgewater Park Volunteer Fire Department – IFB # GOSR-IFB-2022-01

17. IRAN DIVESTMENT ACT

Every bid made to HTFC/GOSR pursuant to a competitive solicitation must contain the following statement, signed by the Bidder on company letterhead and affirmed as true under penalty of perjury:

"By submission of this bid, Bidder and each person signing on behalf of any Bidder certifies, and in the case of a joint bid or proposal each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each Bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of section 165-a of the State Finance Law."

The list in question is maintained by the Office of General Services. A Bid that fails to certify compliance with this requirement may not be accepted as responsive.

VIII. ATTACHMENTS & APPENDICES

ATTACHMENTS:

- Attachment A – Bid Schedule
- Attachment B – Insurance Requirements
- Attachment C – Standards & Specifications
- Attachment D – Plans & Drawings
- Attachment E – Prevailing Wage and Other Labor Requirements

APPENDICES:

  - Certification Regarding Lobbying
- Appendix II – Standard Clauses for Contracts with the Housing Trust Fund Corporation
  - HTFC Construction Agreement
  - Appendix A – Affirmation of Understanding of and Agreement Pursuant to State Finance Law §139-j (3) and §139-j (6)(b)
  - Appendix B – Offeror Disclosure of Prior Non-Responsibility Determinations
  - Non-Collusive Bidding Certification
  - New York State Vendor Responsibility Questionnaire For-Profit Construction (CCA-2)
- Appendix III – Diversity Forms
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- Equal Employment Opportunity Staffing Plan (PROC-1)
- MWBE Utilization Plan (PROC-2)
- SDVOB Utilization Plan
- Equal Employment Opportunity Statement (PROC-8)
- Section 3 Plan

- Appendix IV– Construction Requirements and Procedures for Contracts with Housing Trust Fund Corporation
  - Affirmation of Income Payments to MBE/WBE
  - Monthly Employment Utilization Report
  - Appendix A – Standard Clauses for NYS Contracts
ATTACHMENT A – BID SCHEDULE

The costs for any Work shown or required in the Contract Documents, but not specifically identified as a line item are to be included in the related line items and no additional compensation shall be due to Contractor for the performance of the Work.

All blank spaces in the attached Bid Schedule must be filled in. Failure to fill in any blank spaces may render the bid non-responsive. In case of discrepancy between the Unit Price and Item Cost set forth for a unit basis item, the Unit Price shall prevail and shall be utilized as the basis for determining the lowest responsive, responsible Bidder. However, if the amount set forth as a Unit Price is ambiguous, unintelligible or uncertain for any cause, or is omitted, or is the same amount as the entry in the Item Cost column, then the amount set forth in the Item Cost column for the item shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the Unit Price.

The undersigned agrees that this Bid Schedule constitutes a firm offer to GOSR which cannot be withdrawn for the number of calendar days indicated in the Invitation for Bids from and after the Bid opening, or until a Contract for the Work is fully executed by GOSR and a third party, whichever is earlier.

In submitting this Bid, Bidder acknowledges and commits to comply with all applicable legal and regulatory requirements.

By submission of this bid, Bidder and each person signing on behalf of any Bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each Bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of section 165-a of the State Finance Law.

Authorized Bidder Signature

Date

Printed Name (First & Last):

Company Name:
## BID SCHEDULE

### Note:
Price to include all labor, equipment, and materials necessary to complete the scope of work called for in the Construction Drawings, Specifications and Invitation for Bid. Any and all means, methods, labor, materials, equipment, permits and expediting that are associated with the provided scope of work required to complete the project shall be included within price submitted by bidder.

### (A) BASE BID

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**SUBTOTAL (A):**

**GRAND TOTAL BID (A) =**

Written in Words

**GRAND TOTAL BID (A) =**

Written in Numbers

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ATTACHMENT B – INSURANCE REQUIREMENTS

Prior to commencing any work but no later than ten (10) days after receipt of the Notice of Award, the Contractor shall submit or cause to be submitted any and all Certificates of Insurance and Endorsements, showing that the Contractor has the required insurance, to the attention of GOSR. Such insurance is to be provided at the sole cost and expense of the Contractor. No Work shall be performed until all of the required insurance has been received and approved.

Contractor shall procure and maintain, at its sole cost and expense, in full force and effect without interruption during all periods of services covered by this Contract, the Statement of Work, or any Work Order(s), insurance naming HTFC as an additional insured against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the Contract by the Contractor, its agents, representatives, employees, or subcontractors, and shall be of the type, and with the limits and deductibles, listed below. It shall be in GOSR’s sole discretion to accept or reject alternative insurance requirements. Contractor shall require all of its Subcontractors to procure and maintain the same insurance for the duration of the Contract. Such insurance shall meet at least the following minimum levels of coverage:

Commercial General Liability Insurance. In an amount not less than One Million Dollars ($1,000,000.00) per occurrence, bodily injury (including death) and property damage combined; One Million Dollars ($1,000,000.00) per occurrence for personal and advertising injury; Two Million Dollars ($2,000,000.00) products/completed operations aggregate; and Two Million Dollars ($2,000,000.00) per location aggregate. Such insurance shall be written on an “occurrence” basis and shall apply on a primary, non-contributory basis irrespective of any other insurance, whether collectible or not. The policy(ies) shall be endorsed to name HTFC, the State of New York, and all “benefitted parties” as “Additional Insureds”.

Comprehensive Automobile Liability. In an amount not less than One Million Dollars ($1,000,000.00) combined single limit for both bodily injury and property damage covering all owned, non-owned and hired vehicles utilized in or related to Contractor’s activity or performance under the Contract, the Statement of Work, or any Work Order(s).

Workers’ Compensation Insurance and Disability Benefits Insurance. Covering employers’ liability, workers compensation coverage, and disability benefits coverage as required by the provisions of the Workers’ Compensation Law (WCL) of the State of New York.

Standard “All Risk” Property Insurance covering all equipment and material (owned, borrowed or leased by Contractor or its employees) utilized and/or related to Contractor’s activity or performance under the Agreement, the Services or Scope of Services, or any Work Order(s), to the full replacement value, and which shall allow for a waiver of subrogation in favor of HTFC. Contractor hereby agrees to waive its right of subrogation against HTFC. Failure of the Contractor to secure and maintain adequate coverage shall not obligate HTFC, its agents of employees, for any losses.
Excess Liability Insurance. In an amount not less than Eight Million Dollars ($8,000,000.00) per occurrence and Eight Million Dollars ($8,000,000.00) per location aggregate limit, applying on a primary, non-contributory basis irrespective of any other insurance, whether collectible or not, and applying in excess over all limits and coverages noted in paragraphs (i) and (ii) above. This policy shall be written on an “occurrence” basis and shall be endorsed to name HTFC and the State of New York as “Additional Insureds”.

In addition-If Contractor will be hauling hazardous material, Contractor’s Pollution Liability (CPL) Coverage. In an amount not less than Five Million Dollars ($5,000,000.00) covering pollution related claims and also including Non-owned disposal site(s) liability, Transportation pollution liability coverage endorsement, Additional Insured Endorsement, and Additional Insured Endorsement-Products-Completed Operations Hazard. Such insurance shall be written on an “occurrence” basis and shall apply on a primary, non-contributory basis.

If Contractor is providing Professional Services as a Pollution Mitigation and/or Abatement Contractor, Professional Liability Including Pollution Legal Liability Insurance. In an amount not less than Two Million Dollars ($2,000,000.00) per claim limit, providing coverage for damages arising out of the acts, errors or omissions of the Contractor and/or those acting under the Contractor’s direction or control and/or those for whose acts the Contractor may be liable, and relating to the professional services rendered. In the event that coverage under such policy is terminated upon or after completion of the project, then an extended reporting period of not less than two (2) years will be purchased by the Contractor. HTFC, the State of New York, and all “benefitted parties” shall be named as “Additional Insureds” on the Pollution Legal Liability coverage.

All policies shall be written with insurance companies licensed to do business in New York and rated not lower than A+ in the most current edition of AM Best’s Property Casualty Key Rating guide. All policies will provide primary coverage for obligations assumed by Contractor under this Agreement, the Services or Scope of Services, or any Work Order(s), and shall be endorsed to provide that HTFC shall receive thirty (30) days prior written notice in the event of cancellation, non-renewal or material modification of such insurance.

The Contractor shall provide Certificates of Insurance to HTFC prior to the commencement of work, and prior to any expiration or anniversary of the respective policy terms, evidencing compliance with all insurance provisions set forth above, and shall provide full and complete copies of the actual policies and all endorsements upon request. Failure to provide adequate or proper certification of insurance, specifically including HTFC, the State of New York, and all “benefitted parties” as “Additional Insureds”, shall be deemed a breach of contract.

An Accord Certificate of Insurance is an acceptable form to submit evidence of all forms of insurance coverage except Workers’ Compensation Insurance and Disability Benefits Insurance. For evidence of Workers’ Compensation Insurance, the Contractor must supply one of the following forms: Form C-105.2 (Certificate of Workers’ Compensation Insurance issued by a private carrier), Form U-26.3 (Workers Compensation Insurance issued by the State Insurance Fund), Form SI-12 (Certificate of Workers’ Compensation Self-insurance), Form GSI-105.2 (Certificate of Participation in Workers’ Compensation Group Self-Insurance), or CE-200 (Certificate of Attestation of Exemption from NYS Workers’ Compensation and/or Disability Benefits Coverage). For evidence of Disability Benefits Insurance, the Contractor must supply one of the following forms: Form DB-120.1 (Certificate of Disability Benefits Insurance), Form DB-155 (Certificate of Disability Benefits Self-Insurance), or
CE-200 (Certificate of Attestation of Exemption from NYS Workers’ Compensation and/or Disability Benefits Coverage).

Subcontractors under this Agreement shall only be subject to (i)-(iv) of this Section, except that (vi)-(vii) shall apply where applicable. However, Contractor shall require subcontractors to maintain greater limits and/or other or additional insurance coverages if greater limits and/or other or additional insurance coverages are (a) generally imposed by the Contractor given its normal course of business for subcontracts for similar services to those being provided by the subcontractor at issue; or (b) reasonable and customary in the industry for similar services to those anticipated hereunder.

NOTE: All General Liability, Comprehensive Auto, Excess Liability, and Pollution, Legal Liability policies must be endorsed to name HTFC, and all Indemnities as Additional Insureds.

**Indemnification Provisions:**

Contractor will also be required to agree to the following indemnification provisions:

Contractor shall, and hereby agrees, to hold harmless, defend (with counsel acceptable to HTFC), and indemnify HTFC and the State of New York, and its successors, affiliates, or assigns, and any of their employees, officers, directors, attorneys, consultants, agents, managers, representatives, and affiliates (collectively, “HTFC”), from and against any and all losses, expenses, claims, demands, damages, judgments, liabilities or alleged liabilities, costs of any form or nature whatsoever (including reasonable attorneys’ fees), resulting from, arising out of, or in consequence of any action or cause of action in connection with this Agreement, the Services or Scope of Services, or any Work Order(s), including, but not limited to, property damage, any injuries or death sustained by any persons, employees, agents, invitees and the like, any infringement of copyright, royalty, or other proprietary right in consequence of any design(s) created and/or specifications prepared in accordance with the Agreement, the Services or Scope of Services, or any Work Order(s), any injuries or damages resulting from defects, malfunction, misuse, etc. of Contractor-provided equipment and materials, any violations of law, violations of this Agreement, or the conduct (including any acts, omissions, malfeasance, or willful misconduct) of Contractor or any subcontractor or supplier of any level or tier or anyone directly or indirectly employed by any of them or anyone for whose acts they may be liable.

This indemnity shall expressly include, but is not limited to, the obligation of Contractor to indemnify and reimburse HTFC for any and all attorneys’ fees and other litigation or dispute resolution costs incurred, or to be incurred, in HTFC’s enforcement of this Agreement, or any portion thereof, against Contractor or otherwise arising in connection with this Agreement. This clause shall survive indefinitely the termination of this Agreement for any reason.

It is expressly understood and agreed that the risk of loss for property damage during the course of construction or other work passes to HTFC only after completion of the work enumerated in the Agreement, Services or Scope of Services, or any Work Order(s). Accordingly, all of the indemnification provisions as set forth herein shall also apply to any losses sustained prior to the passing of risk of loss to HTFC. This clause shall survive indefinitely the termination of this Agreement for any reason.
For construction, environmental remediation/mitigation, or other work in which HTFC has entered into this contract to perform the work on behalf of homeowners or others who may be determined to be third party beneficiaries of this contract ("benefitted parties"), all of the indemnification provisions set forth herein shall expressly extend to such "benefitted parties" in like manner and degree as to HTFC.

Notwithstanding the foregoing indemnification provisions, Contractor remains liable, without monetary limitation, for direct damages for personal injury, death or damage to real property or tangible personal property or intellectual property attributable to the negligence or other tort of Contractor, its officers, employees or agents.
ATTACHMENT C – STANDARDS & SPECIFICATIONS

THE FOLLOWING SPECIFICATIONS ARE INCORPORATED HEREIN BY REFERENCE AS IF SET FORTH IN THEIR ENTIRETY:

1. Technical Specifications
2. Environmental Inspection Report
DIVISION 1 – GENERAL CONSTRUCTION

SECTION 000000 — TABLE OF CONTENTS

SECTION 011200 — CONTRACT SUMMARY OF WORK
Section Description: Responsibilities of each contract for the work, coordination for temporary facilities and controls

SECTION 012900 — PAYMENT PROCEDURES
Section Description: Administrative requirements for Contractor's Application for Payment

SECTION 013100 — PROJECT MANAGEMENT AND COORDINATION
Section Description: Administrative requirements for project meetings; preconstruction, construction kick-off, progress; RFIs and Web sites

SECTION 013200 — PROJECT SCHEDULING AND PROGRESS DOCUMENTATION — SINGLE PRIME CONTRACT
Section Description: Contractor's responsibility to coordinate and cooperate with Owner to maintain P6 Project Management (scheduling software); Contractor's reports.

SECTION 013300 — SUBMITTAL PROCEDURES
Section Description: Procedures for action and informational submittals including product submittals and submittal schedule

SECTION 014000 — QUALITY AND CODE REQUIREMENTS
Section Description: Administrative and regulatory requirements for Work permit, code compliance certificate and certificate of occupancy; NYS or NYC Statement of Special Inspections and Tests

SECTION 015000 — TEMPORARY FACILITIES AND CONTROLS
Section Description: Temporary utilities and facilities for construction support, security and facility protection

SECTION 016000 — PRODUCT REQUIREMENTS
Section Description: Administrative and procedural requirements for product, material, and equipment selection and handling, warranties and comparable products

SECTION 017329 — CUTTING AND PATCHING
Section Description: Procedural requirements for cutting and patching

SECTION 017700 — CONTRACT CLOSEOUT REQUIREMENTS
Section Description: Administrative contract closeout requirements including closeout conference, Notice of Substantial Completion, final application for payment and final cleaning

SECTION 017823 — OPERATION AND MAINTENANCE MANUALS
Section Description: Maintenance and record keeping requirements of operational and maintenance manuals for products and equipment
SECTION 017839 — AS BUILT DOCUMENTS
Section Description: Maintenance and record keeping requirements of as-built drawings, as-built specifications, as-built schedule and other product record documents

SECTION 019113 — GENERAL COMMISSIONING REQUIREMENTS
Section Description: Administrative requirements and procedures for commissioning all systems

TECHNICAL SPECIFICATIONS

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028100 SOIL DISPOSAL
028200 ASBESTOS REMOVAL
028300 REMOVAL AND DISPOSAL OF LEAD-CONTAINING PAINT
028600 IDENTIFICATION AND DISPOSAL OF HAZARDOUS WASTE
028700 REMOVAL AND DISPOSAL OF UNIVERSAL WASTE AND FLUORESCENT LAMPS

DIVISION 3 — concrete
033000 CAST-IN PLACE CONCRETE

DIVISION 4
042200 CONCRETE UNIT MASONRY

DIVISION 5 — METALS
055213 PIPE AND TUBE RAILINGS

DIVISION 6 — WOOD, PLASTICS AND COMPOSITES
061000 ROUGH CARPENTRY
062000 FINISH CARPENTRY

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078413 PENETRATION FIRESTOPPING
078446 FIRE-RESISTIVE JOINT SYSTEMS
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<td>081113.01</td>
<td>INTERIOR HOLLOW METAL DOORS AND FRAMES</td>
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<tr>
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<td>FLUSH WOOD DOORS</td>
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<td>083313</td>
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<td>085113</td>
<td>ALUMINUM HURRICANE WINDOWS</td>
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<td>DOOR HARDWARE</td>
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<td>GYPSUM BOARD</td>
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<td>TILING (THIN SET)</td>
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<td>095113</td>
<td>ACOUSTICAL PANEL CEILINGS</td>
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<td>096513</td>
<td>RESILIENT BASE AND ACCESSORIES</td>
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<td>096543</td>
<td>LINOLEUM FLOORING</td>
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<td>PANEL SIGNAGE</td>
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<td>PIPE AND VALVE IDENTIFICATION</td>
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<td>DRAINAGE ACCESSORIES</td>
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<td>PIPING INSULATION</td>
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<td>CLEANING AND TESTING</td>
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DIVISION 23- HEATING, VENTILATING, AND AIR CONDITIONING

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<td>233421</td>
<td>POWER ROOF VENTILATORS</td>
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Work Order Number: NTF-1-DES
Edgewater Park Volunteer Fire Department — Storm Hardening and Abatement

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<td>SERVICE GROUNDING AND BONDING</td>
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<td>EXPOSED CONDUIT- WET LOCATIONS</td>
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<td>OCCUPANCY SENSORS FOR LIGHTING CONTROL</td>
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DIVISION 27
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DIVISION 28 — ELECTRONIC SAFETY AND SECURITY

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DIVISIONS 32 - 48
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END OF TABLE OF CONTENTS
SECTION 011200 - CONTRACT SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Contract Documents, including but not limited to, the Drawings and Individual Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes a summary of each Contract for the Project, including responsibilities for coordination and temporary facilities and controls.

B. Specific requirements for the work of each Contract are also indicated in individual Specification Sections and on Drawings for each Contract.

C. Related Sections:
   1. Section 013100 - Project Management and Coordination.
   2. Section 013200 - Project Scheduling and Progress Documentation.
   3. Section 015000 - Temporary Facilities and Controls.

1.3 CONTRACTOR'S PROJECT MANAGER

A. Contractor and each Sub-contractor shall identify a project manager who shall be responsible for coordination between and among each and all contractors and subcontractors for the Project and the Owner.

1.4 COORDINATION ACTIVITIES

A. Coordination activities of Contractor's project manager include, but are not limited to, the following:

   1. Provide overall coordination of the Work
   2. Coordinate use of access shared with other contractors to workspaces and workspaces shared with other contractors.
   3. Coordinate product selections for compatibility with either product selected under this Contract and under other contracts for the Project. Identify to Owner and Design Professional incompatibilities between products selected under this Contract and products selected under other contracts for the Project.
   4. Provide overall coordination of temporary facilities and controls.
   5. Coordinate, schedule, and approve interruptions of permanent and temporary utilities, including those necessary to make connections for temporary services.
   6. Coordinate sequencing and scheduling of the Work. Include the following:
GENERAL REQUIREMENTS for CONSTRUCTION

a. Initial Coordination Meeting: At earliest possible date, the Owner will arrange and conduct a meeting with all contractors for the Project for sequencing and coordinating the work of the Project.

7. Provide quality assurance and quality control services specified in Section 014000 Quality and Code Requirements.
8. Coordinate sequence of activities to accommodate tests and inspections, and coordinate schedule of tests and inspections.
9. Provide information necessary to adjust, move, or relocate existing utility structures affected by construction.
10. Provide progress cleaning of all Contract work areas and coordinate progress cleaning of areas or pieces of equipment where more than one contractor has worked.
11. Coordinate cutting and patching.
13. Coordinate firestopping.
14. Coordinate completion of punch list items.
15. Coordinate preparation of As-built drawings and specifications.
16. Print and submit all required project turnover documents.
17. Coordinate preparation of operation and maintenance manuals.

B. Responsibilities of project manager for construction contract includes coordination for temporary facilities and controls, include, but are not limited to, the following:

1. Provide common-use field office for use by all personnel engaged in construction activities.
2. Provide telephone service for common-use facilities.

1.5 GENERAL REQUIREMENTS OF CONTRACTS

A. Extent of Contract: Requirements indicated on drawings and in specification sections determine which Contract includes a specific element of the Work of the Contract.

1. The work described in this section for each contract shall be complete systems and assemblies, including products, components, accessories, and installation required by the respective contract documents.
2. Trenches and other excavation for the work of each contract shall be the work of such contract.
3. Blocking, backing panels, sleeves, and metal fabrication supports for the work of each contract shall be the work of such Contract.
4. Furnishing of access panels for the work of each contract shall be the work of such Contract. Installation of access panels located in the substrate of ceilings, walls and floors shall be the work of the construction contract.
5. Equipment pads for the work of each contract shall be the work of such contract.
6. Roof-mounted equipment curbs for the work of each contract shall be the work of the construction contract.
7. Painting for the work of each contract shall be the work of such contract.
8. Cutting and patching: Each contract shall perform its own cutting and patching.
9. Firestopping for the work of each contract shall be provided by such contract.
B. Each contractor's project manager shall cooperate with all other contractor's project managers involved to coordinate approved substitutions with remainder of the work of the Project.

C. Temporary Facilities and Controls: In addition to specific responsibilities for temporary facilities and controls indicated in this Section and in Section 015000 - Temporary Facilities and Controls, Contractor is responsible for the following:

1. Installation, operation, maintenance, and removal of each temporary facility necessary for its own normal construction activity, and costs and use charges associated with each facility, except as otherwise provided for in this Section 011200.
2. Plug-in electric power cords and extension cords, supplementary plug-in task lighting, and special lighting necessary exclusively for its own activities.
3. Its own field office complete with necessary furniture, utilities, and telephone service.
4. Its own storage and fabrication sheds.
5. Temporary enclosures for its own construction activities.
6. Staging and scaffolding for its own construction activities.
7. General hoisting facilities for its own construction activities.
8. Waste disposal facilities, including collection and legal disposal of its own hazardous, dangerous, unsanitary, or other harmful waste materials.
9. Progress cleaning of work areas affected by its operations on a daily basis.
10. Secure lockup of its own tools, materials, and equipment.
11. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.
SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. The Contract Documents, including but not limited to, the Drawings and Individual Specification Sections, Schedule of Values, Contractor Pencil Copy and Application for Payment, apply to this Section.

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

B. Related Sections:
   1. General Conditions, Article 8 - Payment, for requirements governing provisions for payment.
   2. General Conditions, Article 20 — Opportunity Programs, for requirements governing minority participation.
   3. Section 017700 Contract Closeout Requirements, for administrative contract closeout requirements.

1.3 DEFINITIONS
A. Schedule of Values: A form in the Contract Documents, which establishes minimum level of payment detail to formulate an initial Application for Payment.

B. Contractor's Pencil Copy: A form provided by the Owner, which estimates a billing request from the Contractor. When approved by the Owner, formulates the Application for Payment.

C. Application for Payment: A form provided by the Owner, which provides certification by the Contractor for payment.

1.4 MEASUREMENT AND CONTRACT PAYMENT ITEMS
A. Procurement award will be made on a lump sum basis for the total bid price provided in the Bid Worksheet.

B. The Bid Worksheet contains the schedule of values for bid that are itemized by Specification Division. The Bidders’ bid price shall include pricing required to complete work for all specification section contained for each schedule of value items. Payment for each schedule of value will be made in accordance with progress of completed work performed as detailed in the contract drawings.
GENERAL REQUIREMENTS for CONSTRUCTION

1.5 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with the Owner.

B. The Contractor shall allocate portions of the Contract Sum to labor, material and major equipment costs to various portions of the Work as indicated on the form.

1. Submit the Schedule of Values to the Owner, for approval at earliest possible date after award of the Contract.
2. The Owner shall not approve any billing request until the Schedule of Values is approved.

C. Format and Content: Use model form provided in Contract Documents as a guide to establish line items for the Schedule of Values.

1. Arrange the Schedule of Values with separate columns to indicate the following for each item listed:
   a. 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) Major Equipment.

2. Provide a breakdown of Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent of Contract Sum.
   a. Include separate line items under Contractor and principal subcontracts for LEED documentation, if applicable and other project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.

3. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
4. Allowances: If applicable, provide a separate line item in the schedule of values for each allowance.
5. Each item in the Schedule of Values and Applications for Payment shall be complete. Include Lump Sum and Quantity of Work Allowances.
6. Schedule of Values Updating: The Owner may require the Contractor to revise its Schedule of Values. Further, the Owner reserves the right to accept only those cost distributions which, in the Owner's opinion, are reasonable, equitably balanced and correspond to estimated quantities in Contract Documents.

1.6 MONTHLY APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as approved by the Owner and paid for by the Owner.

1. Initial Application for Payment, the Owner shall not approve any billing request until the Schedule of Values and Construction Schedule is approved.
2. Payment for allowance items and stored materials involve additional requirements.
3. Application for Payment at time of Substantial Completion, and final Application for
Payment involve additional requirements.

B. Payment Application Times: Billing request may be submitted to the Owner once each month.
   1. Submit Contractor's Pencil Copy billing request seven days prior to due date for review by the Owner.

C. Payment Forms: All forms and documents required for payment shall be provided by the Owner. Template forms and documents may also be available from GOSR.

D. Preliminary Procedure: The Contractor may request from the Owner a Contractor's Pencil Copy form. Where indicated on the form, the Contractor shall enter a billing request, either dollar amount or percentage complete for each item number requesting payment.
   1. If applicable, the Contractor shall obtain from the Owner, an Allowance Notice to Proceed for Allowance items and an Agreement for Materials Stored Off-Site prior to billing.
   2. Submit Contractor's Pencil Copy billing request to the Owner for approval.
   3. The Contractor shall provide updated documentation to the Owner in accordance with General Conditions, Article 20 — Opportunity Programs.

E. Procedure: Upon the Owner's approval of the Contractor's Pencil Copy billing request, payment documents will be provided to the Contractor. The Contractor shall complete each document and submit two copies of all documents with original signature & notary where indicated on forms, the following:
   1. Application for Payment.
   3. Contractor and Subcontractor Certifications Form
   4. Contractor's Certified Payroll Form.
   5. Allowance Allocation Form, if applicable

F. Payroll Forms: The Contractor and all Sub-contractors to the Contractor shall submit original copies of the Contractor and Subcontractor Certifications Form and Contractor's Certified Payroll Form.

G. Transmittal: Sign and notarize where indicated on each document, submit two original copies to Owner.
   1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about payment.

H. Stored Materials: The Owner will provide an Agreement for Materials Stored Off-Site and specific forms that the Contractor must complete and submit to the Owner, including but not limited to;
   1. Include in the Contractor's Pencil Copy billing request amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed.
   2. Differentiate between items stored on-site and items stored off-site.
   3. Provide certificate of insurance, evidence of transfer of title to the Owner, and consent of surety to payment, for stored materials.
   4. 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.
   5. Provide summary documentation for stored materials indicating the following:
GENERAL REQUIREMENTS for CONSTRUCTION
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.

I. Payment: Timely payment by the Owner to the Contractor is governed by Section 2880 of the Public Authorities Law.

J. Liens: Upon receipt of a lien, the Owner shall deduct a sum of one and one-half (1 1/2) times the amount stated to be due in the notice of lien from the application for payment. Upon official receipt of discharge of lien, the Owner shall provide payment as stated above.

1.7 APPLICATION FOR PAYMENT AT SUBSTANTIAL COMPLETION

A. Preliminary Procedure: After issuance of the executed Notice of Substantial Completion, submit a Contractor's Pencil Copy billing request showing 100 percent completion for portion of the Work claimed as complete at Substantial Completion.

1. Submit Contractor's Pencil Copy billing request to the Owner for approval.
2. The Contractor shall provide final documentation to the Owner in accordance with General Conditions, Article 20—Opportunity Programs.

B. Reduction of Retainage: The Contractor may request a reduction of retainage upon Substantial Completion of the Work or when a phase of Work is accepted by the Owner.

1. The Contractor submits to the Owner a written request to have retainage reduced and provides a cost estimate and schedule to complete all remaining Work items indicated on the executed Notice of Substantial Completion.
2. The Owner shall deduct from the sum two times the value of remaining items of Work to be completed or corrected.
3. The Owner will provide the Contractor with General Release and Consent of Surety forms based on the amount of reduction. The Contractor shall complete each document and submit three copies of each document with original signature & notary where indicated on forms.
4. The Owner shall hold payment until receipt of completed General Release and Consent of Surety forms.

C. Procedures: Upon the Owner approval of Contractor's Pencil Copy billing request, payment documents will be provided to the Contractor. The Contractor shall complete each document and submit two copies of all documents with original signature & notary where indicated on forms, the following:

1. Application for Payment.
3. Contractor and Subcontractor Certifications Form
4. Contractor's Certified Payroll Form.

D. Payroll Forms: The Contractor and all Sub-contractors to the Contractor shall submit original copies of the Contractor and Subcontractor Certifications Form and Contractor's Certified Payroll Form.

E. Transmittal: Sign and notarize where indicated on each document, submit two original copies to Owner.
F. Payment: Timely payment by the Owner to the Contractor is governed by Section 2880 of the Public Authorities Law.

G. Liens: Upon receipt of a lien, the Owner shall deduct a sum of one and one-half (1 1/2) times the amount stated to be due in the notice of lien from the application for payment. Upon official receipt of discharge of lien, the Owner shall provide payment as stated above.

1.8 FINAL APPLICATION FOR PAYMENT (same as contract closeout documents)

A. Contract Compliance: The Contractor shall comply with the Requirements of General Conditions, Section 10.08 — Limitations on Actions.

B. Preliminary Procedure: All Work and Extra Work of the Contract and all requirements of Section 017700 Contract Closeout Requirements must be complete and approved prior to commencement of final Application for Payment.

1. The Contractor shall request and submit to the Owner a final Contractor's Pencil Copy that will formulate the final Application for Payment.
2. The Contractor shall provide outstanding documentation to the Owner in accordance with General Conditions, Article 20 — Opportunity Programs.

C. Procedures: Upon the Owner approval of Contractor's Pencil Copy billing request, final Application for Payment and Contract closeout documents will be provided to the Contractor. The Contractor shall complete each document and submit two copies of all documents with original signature & notary, where indicated on the forms, the following:

1. Final Application for Payment including remaining Retainage.
3. Contractor and Subcontractor Certifications Form
4. Contractor's Certified Payroll Form.
5. Release Form -- Final Payment to Contractor.
6. Consent of Surety -- Final Payment to Contractor, with power of attorney.

D. Payroll Forms: The Contractor and all Sub-contractors to the Contractor shall submit original copies of the Contractor and Subcontractor Certifications Form and Contractor's Certified Payroll Form.

E. Transmittal: Sign and notarize where indicated on each document, submit two original copies to the Owner.

F. Final Payment: Timely payment by the Owner to the Contractor is governed by Section 2880 of the Public Authorities Law.

G. Liens: Upon receipt of a lien, the Owner shall deduct a sum of one and one-half (1 1/2) times the amount stated to be due in the notice of lien from the final application for payment. Upon official receipt of discharge of lien, the Owner shall provide final payment as stated above.
GENERAL REQUIREMENTS for CONSTRUCTION

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION (Not Used)

END OF SECTION 012900
SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. The Contract Documents, including but not limited to, the Drawings and individual Specification Sections and Contract Manager, apply to this Section.

1.2 SUMMARY
A. Section includes administrative provisions for coordinating construction operations on the Project including, but not limited to, the following:
   1. General project coordination procedures.
   2. Administrative and supervisory personnel.
   3. Coordination drawings.
   4. Requests for Information (RFIs).
   5. Contract Manager software site.
   6. Project meetings.
B. Each contractor shall participate in coordination requirements. Refer to Section 011200 Contract Summary of Work for certain areas of responsibility that are assigned to a specific contractor.
C. Related Sections:
   1. Section 011200 - Contract Summary of Work, for a description of the division of work and responsibility for coordination activities not in this Section.
   2. Section 013200 - Project Scheduling and Progress Documentation, for preparing and submitting Contractor's construction schedule.
   3. Section 017700 - Contract Closeout Requirements, for coordinating closeout of the Contract.
   4. Section 019113 - General Commissioning Requirements, for coordinating the Work with Owner's commissioning authority.

1.3 DEFINITIONS
A. RFI: Request from the Owner, Design Professional, or Contractor seeking information from each other during construction.

1.4 COORDINATION
A. Coordination for Single Contract Project: 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. The Contractor shall utilize the bid milestone schedule included in the Contract Documents to prepare a CPM schedule in accordance with Section 013200 Project Scheduling and Progress Documentation. The Contractor shall submit the proposed CPM schedule to the Owner within 45 days of the Notice to Proceed.

2. 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.

3. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.

4. Make adequate provisions to accommodate items scheduled for later installation.

B. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

1.5 COORDINATED COMPOSITE DRAWINGS

A. Coordinated Composite Drawings, General: Prepare coordinated composite 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 coordinated composite drawings on standard printed data. Include the following information, as applicable:

   a. Use applicable Drawings as a basis for preparation of coordinated composite drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.

   b. Coordinate the addition of trade-specific information to the coordinated composite drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.

   C. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.

   d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.

   e. Show location and size of access doors required for access to concealed dampers, valves, and other controls, including space required opening the access door.

   f. Indicate required installation sequences.

   g. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to the Design Professional indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
B. Coordinated Composite Drawing Organization: Organize drawings as follows:

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

2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on the Drawings. Indicate areas of conflict between light fixtures and other components.

3. Mechanical Rooms: Provide coordinated composite drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire protection, fire alarm, and electrical equipment.

4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.

5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.

6. Mechanical and Plumbing Work: Show the following:
   a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
   b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
   c. Fire-rated enclosures around ductwork.

7. Electrical Work: Show the following:
   a. Runs of vertical and horizontal conduit 1-1/4 inch diameter and larger.
   b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire alarm locations.
   c. Panel board, switch board, switchgear, transformer, busway, generator, and motor control center locations.
   d. Location of pull boxes and junction boxes dimensioned from column center lines.

8. Fire Protection System: Show the following:
   a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.

9. Review: The Design Professional will review coordinated composite drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are the Contractor's responsibility. If the Design Professional determines that the coordinated composite drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, the Design Professional will so inform the Contractor, who shall make changes as directed and resubmit.

C. Coordination Digital Data Files: Prepare coordination digital data files in accordance with the following requirements:
GENERAL REQUIREMENTS for CONSTRUCTION

1. File Preparation Format: The Contractor shall coordinate with the Design Professional and use the same digital data software program, version, and operating system as the original Drawings.

1.6 KEY PERSONNEL

A. Key Personnel Names: Within 15 days after receipt of the Notice to Proceed, submit a list of key personnel assignments with resume and job qualifications, including project manager, project scheduler, commissioning agent, superintendent and other personnel in attendance at the Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers, and email addresses. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to the Project.

1.7 REQUESTS FOR INFORMATION (RFIs)

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, the Contractor shall prepare and submit an RFI in the form specified.

1. Coordinate and submit RFIs in a prompt manner so as to avoid delays in the Contractor's work or work of subcontractors.

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

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

a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C RFI Forms: The Owner's Contract Manager-generated form with substantially the same content as indicated above.
D Design Professional's Action: The Design Professional will review each RFI, determine action required, and respond. Allow a reasonable amount of working days for the Design Professional's response for each RFI. RFIs received by the Design Professional after 1:00 p.m. will be considered as received the following working day.

1. The following RFIs will be returned without action:
   a. Requests for approval of submittals.
   b. Requests for approval of substitutions.
   c. Requests for coordination information already indicated in the Contract Documents.
   d. Requests for adjustments in the date for Substantial Completion or the Contract Sum.
   e. Requests for interpretation of the Design Professional's actions on submittals.
   f. Incomplete RFIs or inaccurately prepared RFIs.

2. The Design Professional's action may include a request for additional information, in which case the Design Professional's time for response will date from time of receipt of additional information.

3. The Design Professional's action on RFIs that may result in a change to the date of Substantial Completion or the Contract Sum may be eligible for the Contractor to submit a Claim in accordance with procedures in General Conditions, Article 10 — Claims and Disputes.
   a. If the Contractor believes the RFI response warrants change in the date of Substantial Completion or the Contract Sum, notify the Owner in writing within fifteen (15) days of receipt of the RFI response.

E. On receipt of the Design Professional's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify the Owner and Design Professional within five days if the Contractor disagrees with response.

F. RFI Log: Coordinate and cooperate with the Owner to prepare, update and maintain the use of the Contract Manager RFI log. The RFI log will include not less than the following:

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

A. Coordinate and cooperate with the Owner for managing project communication and documentation until Contract Closeout. The Contract Manager software site may include, but is not limited to, the following functions:

1. Project directory.
2. Project correspondence.
3. Meeting minutes.
5. RFI forms and logs.
6. Task and issue management.
7. Submittals forms and logs.
8. Payment application forms.
10. Reminder and tracking functions.
11. Archiving functions.

1.9 PROJECT MEETINGS

A. General: The Owner and/or Design Professional will schedule and conduct meetings at the Project site, unless otherwise indicated.

1. Attendees: The Owner and/or Design Professional will inform participants and others involved, and individuals whose presence is required, of date and time of each meeting.
2. Agenda: The Owner and/or Design Professional will prepare the meeting agenda through the use of the Owner's Contract Manager software and distribute the agenda to all invited attendees.
3. Minutes: The Owner and/or Design Professional will record significant discussions and agreements achieved in Contract Manager and distribute the meeting minutes to everyone concerned.

B. Construction Kick-off Meeting: The Owner will schedule and conduct a construction kick-off meeting before starting construction, at a time convenient to the Owner and Design Professional, upon issuance of the Notice to Proceed.

1. The meeting shall review responsibilities and personnel assignments.
2. Attendees: The Owner, Owner's Commissioning Authority, Design Professional, and their consultants; the Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the meeting shall be familiar with the Project and authorized to make binding decisions on matters relating to the Work.
3. Agenda: The meeting agenda will include items of significance that could affect progress, including the following:

   a. Tentative construction schedule.
   b. Phasing.
   c. Critical work sequencing and long-lead items.
   d. Designation of key personnel and their duties.
   e. Lines of communications.
GENERAL REQUIREMENTS for CONSTRUCTION

f. Procedures for processing field decisions and Change Orders.
g. Procedures for RFI’s.
h. Procedures for testing and inspecting.
i. Procedures for processing Applications for Payment.
j. Distribution of the Contract Documents.
k. Submittal procedures.
l. Sustainable design requirements.
m. Preparation of As-builts and turnover documents.
n. Use of the premises.
o. Work restrictions.
p. Working hours.
q. Owner's occupancy requirements.
r. Responsibility for temporary facilities and controls.
s. Procedures for moisture and mold control.
t. Procedures for disruptions and shutdowns.
u. Construction waste management and recycling.
v. Parking availability.
w. Office, work, and storage areas.
x. Equipment deliveries and priorities.
y. First aid.
z. Security.
aa. Progress cleaning.
bb. Safety.

4. Minutes: The Owner and/or Design Professional will use Contract Manager to record and distribute meeting minutes.

C. Progress Meetings: The Owner will conduct progress meetings at regular intervals.

1. Coordinate dates of meetings with preparation of payment requests.
2. Attendees: The Owner's Commissioning Authority, and Design Professional, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with the Project and authorized to make binding decisions on matters relating to the Work.
3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of the Project.

a. The Project Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to the Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

1) Review schedule for next scheduled progress meeting period.

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

1) Interface requirements.
GENERAL REQUIREMENTS for CONSTRUCTION

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

4. Minutes: The Owner and/or Design Professional entity responsible for conducting the meeting will use Contract Manager to record and distribute the meeting minutes to each party present and to parties requiring information.

   a. Schedule Updating: Coordinate with the Owner to revise the Project Schedule after each progress meeting where revisions to the schedule have been made or recognized. The Owner will issue revised schedule concurrently with the report of each meeting.

D. Preinstallation Meetings: The Owner may conduct preinstallation meetings at the Project site before each construction activity that requires coordination with other construction and major assemblies of the Work requiring tight control and coordination.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow shall attend the meeting. The Owner to advise the Contractor, Design Professional and Owner's Commissioning Authority of scheduled meeting dates.

2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

   b. Options.
   c. Related RFIs.
   d. Related Change Orders.
   e. Purchases.
   f. Deliveries.
   g. Submittals.
   h. Review of mockups.
   i. Possible conflicts.
   j. Compatibility problems.
   k. Time schedules.
   l. Weather limitations.
GENERAL REQUIREMENTS for CONSTRUCTION

m. Manufacturer's written recommendations.

n. Warranty requirements.

o. Compatibility of materials.

p. Acceptability of substrates.

q. Temporary facilities and controls.

r. Space and access limitations.

s. Regulations of authorities having jurisdiction.

t. Testing and inspecting requirements.

u. Installation procedures.

v. Coordination with other work.

w. Required performance results.

x. Protection of adjacent work.

y. Protection of construction and personnel.

3. The Owner and/or Design Professional will use Contract Manager to record significant meeting discussions, agreements, and disagreements, including required corrective measures and actions.

4. Reporting: The Owner and/or Design Professional will distribute minutes of the meeting to each party present and to other parties requiring information.

5. Do not proceed with installation if the meeting cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the meeting at earliest feasible date.

E. Project Closeout Conference: The Owner may schedule and conduct a Project closeout conference, at a time convenient to the Owner and Design Professional, but no later than sixty (60) days prior to the scheduled inspection date for Substantial Completion.

1. The Owner will conduct the conference to review requirements and responsibilities related to the Project closeout.

2. Attendees: The Owner, Owner's Commissioning Authority, Design Professional, and their consultants; the Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with the Project and authorized to make binding decisions on matters relating to the Work.

3. Agenda: Discuss items of significance that could affect or delay the Project closeout, including the following:

   a. Submission of turnover documents.

   b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.

   c. Requirements for demonstration and training.

   d. Preparation of Contractor's punch list.

   e. Procedures for processing Applications for Payment at Substantial Completion and for final payment.

   f. Coordination of separate contracts.

   g. Owner's partial occupancy requirements.

   h. Installation of Owner's furniture, fixtures, and equipment.

   i. Responsibility for removing temporary facilities and controls.

4. Minutes: The Owner and/or Design Professional conducting meeting will use Contract Manager to record and distribute meeting minutes.
GENERAL REQUIREMENTS for CONSTRUCTION

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION (Not Used)

END OF SECTION 013100
GENERAL REQUIREMENTS for CONSTRUCTION

SECTION 013200 – PROJECT SCHEDULING AND PROGRESS DOCUMENTATION – SINGLE PRIME CONTRACT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Contract Documents, including but not limited to, the Drawings and individual Specification Sections and Bid Milestone Schedule, apply to this Section.

1.2 SUMMARY

A. This is a single prime contract therefore the Contractor is responsible for the scheduling and documentation requirements as outlined in this section 013200.

B. Section includes administrative and procedural requirements to plan, schedule and document the progress of construction during the performance of the Work, including the following:

1. Critical Path Method (CPM) schedule and reports.
2. Material location reports.
3. Field condition reports.
4. Special reports.

C. Related Sections:

1. Section 011200 – Contract Summary of Work, for preparing a combined CPM Schedule.
2. Section 013300 – Submittal Procedure, for submitting schedules and reports.
3. Section 014000 – Quality and Code Requirements, for submitting a schedule of tests and inspections.

1.3 DEFINITIONS

A. Project: Work at the Site carried out pursuant to one or more Contracts.

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

1. Critical Activity: An activity on the critical path that has no total float.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

C. Bid Milestone Schedule: Interim milestones, included in the Contract Documents, which the Contractor utilizes to formulate the Baseline Schedule.
GENERAL REQUIREMENTS for CONSTRUCTION

D Baseline Schedule: Initial schedule, prepared by the Contractor, to complete the Work of the Contract in accordance with the Contract duration and starting point to which schedule updates are compared.

E. CPM: Critical Path Method is a scheduling method used to plan and schedule construction projects where activities are arranged based on activity relationships creating a time scaled network diagram.

F. PDM: Precedence Diagram Method follows the standard CPM calculations and allows for special logic relationships creating an interdependent relationship throughout the network.

G Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no total float.

H. Data Date: The date when the status of the CPM schedule is determined, showing the calendar start date for the update period.

I. Float: The measure of leeway in starting and completing an activity.
   1. Float time is not for the exclusive use or benefit of either the Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Substantial 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 Substantial Completion date.

1.4 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in both electronic (PDF) file format and as electronic backup file in native software format.

B CPM Schedule: 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 (baseline or updated) and date on label.

C CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain; activity ID number, activity description, original duration, remaining duration, actual duration, early and late start and finish dates and total float in calendar days.
   1. Activity Report: List of all activities sorted by early or actual start date in each phase, area and level following the physical divisions of the Work.
   2. Short Term Activity Report: Lists all activities occurring from the update data date in a two month forward and one month back window.
GENERAL REQUIREMENTS for CONSTRUCTION

3. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by early or actual start date. Include activity ID number and float path(s).

4. Total Float Report: Provide a cumulative list of total float from each update period with comments associated to any and all variances.

5. Procurement Report: List all procurement activities sorted in order of the item being procured.

6. Narrative Report: The project scheduler shall describe the nature of the submission, interpretation of calculations, issues affecting progress and a milestone analysis comparing progress against the baseline and update schedules.

D. Material Location Reports: Submit at monthly intervals.

E. Field Condition Reports: Submit at time of discovery of differing conditions.

F. Special Reports: Submit at time of unusual event.

G. Qualification Data: For project scheduler.

1.5 QUALITY ASSURANCE

A. Project Scheduler Qualifications: An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within timeframes requested by the Owner. The project scheduler shall have or be able to obtain certification as a Planning and Scheduling Professional (PSP) or have a minimum of five years of demonstrated experience scheduling large capital projects.

B. Prescheduling Conference: The Owner may conduct conference at the Project site to comply with requirements in Section 013100 - Project Management and Coordination. Review methods and procedures related to the Baseline Schedule and the CPM 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 coordination, including phasing, work stages, area separations, interim milestones and Beneficial Occupancy.
4. Review delivery dates for Owner-furnished products.
5. Review schedule for work of Owner's separate contracts.
6. Review time required for review of submittals and resubmittals.
7. Review requirements for tests and inspections by independent testing and inspecting agencies.
8. Review time required for completion and startup procedures.
9. Review and finalize list of construction activities to be included in schedule.
10. Review submittal requirements and procedures.
11. Review procedures for updating schedule.
1.6 COORDINATION

A. Coordinate preparation and processing of CPM schedules and reports with the performance of the Work and with CPM scheduling and reporting of separate Contractors.

1. Coordinate new Baseline Schedules and CPM schedule updates with separate Contractor's when additional Contracts are executed during the entire duration of the Project.

B. Coordinate CPM schedule with the Contractor's Submission Schedule, progress reports, and other required schedules and reports.

1. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 CRITICAL PATH METHOD SCHEDULE, GENERAL

A. Bid Milestone Schedule: The Owner shall provide a Bid Milestone Schedule, which is attached to this section as a template for the Baseline Schedule. Nothing in the Bid Milestone Schedule, Baseline Schedule or CPM schedule shall preclude the Contractor from advancing the Work of the Contract.

1. Include milestones indicated in the Contract Documents in Baseline Schedule, including, but not limited to, the Notice to Proceed, interim milestones, Substantial Completion, and Contract close-out.
2. Substantial Completion date shall not be changed by submission of a schedule that shows an early completion date, unless approved by the Owner.
3. No time for weather will be apportioned for foreseeable occurrences in a specific regional area. The Contractor shall be responsible to determine reasonable averages and make allowances in the performance of the Work.

B. Activities: Treat each numbered activity as a consumable resource for each principal element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 15 days, unless specifically allowed by the Owner.
2. Procurement Activities: Include procurement process activities for 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 013300 - Submittal Procedures in schedule. Coordinate submittal review times in the CPM schedule with dates entered in the Contractor's Submission Schedule.
4. Startup and Testing Time: Include not less than 15 days for startup and testing.
5. Substantial Completion: Indicate completion on the date established for Substantial Completion, and allow time for the Owner's administrative procedures necessary to execute the Notice of Substantial Completion (NOSC).
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6. Incomplete Work items and Contract Closeout: Include not more than 60 days for incomplete Work items and Contract Closeout Requirements.

C. Constraints: Include constraints and work restrictions indicated in the Contract Documents, or approved by the Owner prior to use and show how date constraints affect the sequence of the Work.

1. 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.

D. 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 RFIs.
3. Rejected or unreturned submittals.
4. Notations on returned submittals.

E. Recovery CPM Schedule: When periodic update indicates the Work is 15 or more calendar days behind the current approved CPM schedule, submit a separate recovery CPM schedule indicating means by which the Contractor intends to regain compliance with the CPM schedule. Indicate changes to working hours, working days, crew sizes, and equipment required achieving compliance, and dating by which recovery will be accomplished, subject to Owner's approval.

F. Computer Scheduling Software: Prepare CPM schedules using current version of a program that has been developed specifically to manage CPM schedules and interface with the Owner's electronic file of the Bid Milestone Schedule.

1. Utilize Primavera P6 or P3 Primavera Project Planner operating system.

2.2 CRITICAL PATH METHOD SCHEDULE (CPM SCHEDULE)

A. Baseline Schedule: Prepare schedule using a time-scaled PDM network diagram representing the Work of the Contract. Total float time shall be equal to or greater than zero in the Baseline Schedule.

1. Submit Baseline Schedule within 15 days of the date established for the Notice to Proceed. Outline significant construction activities for the first 90 days of construction. Include skeleton diagram for the remainder of the Work based on indicated activities.
2. Develop network diagram in sufficient time to submit Baseline Schedule so it can be accepted for use no later than 30 days after date established for the Notice to Proceed.
   a. Failure to include any work item required for the performance of the Work shall not excuse the Contractor from completing the Work of the Contract within applicable completion dates, regardless of the Owner's approval of the schedule.

B. CPM Schedule: Prepare contemporaneous schedules using a time-scaled PDM network for sequencing the Work and showing the progress of the Work.
1. Establish procedures for monitoring and updating the CPM schedule and for reporting progress. Coordinate procedures with the progress meeting and payment request date.
2. Coordinate the Work occurring concurrently through the integration of other Contractors' Baseline Schedules into the CPM schedule.
3. Conduct educational workshops to train and inform the Contractor's key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule in order to correlate with Contract durations.

CPM Schedule Preparation: Prepare a list of all activities required to complete the Work of the Contract. At minimum, each individual specification section, including General Requirement sections, as indicated in the Project Manual, shall be listed as an activity.

1. Activities ID: Provide a unique identifier to each activity. No activity ID shall be recycled or reused.
2. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
   a. Preparation and processing of submittals.
   b. Mobilization and demobilization.
   c. Purchase of materials.
   d. Delivery.
   e. Fabrication.
   f. Utility interruptions.
   g. Installation.
   h. Work by Owner that may affect or be affected by the Contractor's activities.
   i. Testing and commissioning.
   j. Incomplete Work items and Contract closeout.
3. Actual Activity Dates: Once an activity has been assigned an actual date of occurrence, the status of that activity shall not change. Any change to actual dates must be accompanied with supporting data and approved by the Owner. No actual start date shall occur ahead of the data date.
4. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with the Bid Milestone Schedule dates.
5. Processing: Process data to produce output data status on a computer-drawn, PDM network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract duration.
6. Calculations: The schedule network shall be calculated allowing activities to retain their original logic. Progress override shall not be used when calculating the network status.
7. Logic: Leads and lags will not be used when the creation of an activity will perform the same function. Lag durations contained in the schedule shall not have negative value. Lead and lag durations shall not exceed the durations of the activity they are assigned.
   a. There shall be only two open ended activities; (1) Notice to Proceed, with no predecessor logic, and (2) Final Payment, with no successor logic. All intermediate activity logic shall be connected.
b. Out of sequence activities that have progressed before all preceding logic will be allowed only on a case by case basis, as approved by the Owner. The Contractor shall propose logic corrections to eliminate all out of sequence progress and correct out of sequence progress that continues for more than two update cycles by logic revisions, as approved by the Owner.

8. Float: The Owner shall reject the schedule and schedule updates for the use of float suppression techniques such as preferential sequencing, special lead lags logic constraints, zero total or zero free float constraints, extended activity times, or imposing constraint dates other than what is required by the Contract.

a. The use of resource leveling used for the purpose of artificially adjusting activity durations to consume float and influence the critical path is prohibited.

b. A schedule showing work completing in less time than the Contract duration and accepted by the Owner, will be considered to have float.

c. Any float generated during the performance of the Work, due to efficiencies of the Owner or any Contractor is not for sole use of the party generating the float.

d. Negative float will not be a basis for requesting time extensions and will not be construed as a means of acceleration or schedule extension.

9. Format: Follow the applicable individual specification sections of the Work as the bases for the content of the CPM schedule. Organize the CPM schedule to provide the necessary detail for each area, level, quadrant and section as needed in the performance of the Work.

D. Changes in the Work: For each proposed change and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall CPM schedule.

E. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:

1. Identification of activities that have changed, including the reason each adjustment was necessary.
2. Changes in early and late finish dates.
4. Changes in the critical path.
5. Changes in total float or slack time.
6. Changes in the duration for Substantial Completion.

2.3 REPORTS

A. 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.

B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for
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Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.4 SPECIAL REPORTS

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

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

PART 3 - EXECUTION

3.1 CPM SCHEDULE

A. Project Scheduler: Engage a consultant or person skilled in construction planning and scheduling to provide planning, scheduling, evaluation, and reporting services using CPM scheduling.

1. In-House Option: The Owner may waive the requirement to retain a consultant if Contractor employs skilled personnel with experience in CPM scheduling and reporting techniques. Submit qualifications.

2. Meetings: Project scheduler shall attend all meetings related to the Project progress, alleged delays, and time impact.

B. CPM Schedule and CPM Reports Updating: Prior to each scheduled progress meeting, update schedule to reflect actual construction progress and activities. Issue schedule and reports one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the CPM reports of each such meeting. As a minimum, schedule update submissions shall occur monthly and within 30 days of the schedule Data Date.

2. Include CPM reports 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 remaining duration for each activity.

C. Distribution: Submit one electronic copy, in format specified, to the Owner and distribute copies of approved schedule and reports to the Owner, Design Professional, separate contractors, testing and inspecting agencies, and other parties identified by the Owner with a need-to-know schedule responsibility.

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

END OF SECTION 013200
GENERAL REQUIREMENTS for CONSTRUCTION

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Contract Documents, including but not limited to, the Drawings and individual Specification Sections and Contractor's Submission Schedule, apply to this Section.

1.2 SUMMARY

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

B. Related Sections:
   1. Section 013200 Project Scheduling and Progress Documentation Single Prime, for submitting schedules and reports, includes Contractor's construction schedule.
   2. Section 017700 Contract Closeout Requirements, for documents required to closeout contract.
   3. Section 017823 — Operation and Maintenance Manuals, for submitting operation and maintenance manuals.

C. All materials, products and vendors listed in the specifications are shown for purposes of performance and quality standards. In no way shall this be perceived or considered as sole-sourcing. The contractor may provide an equal to or alternate substitution of materials, products or vendors for approval by the Engineer.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require the Design Professional'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 the Design Professional'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.


D. Required Submittal List Utility application: Interacts with and to be used with the Owner's Contract Manager system. The Design Professional uses the utility to itemize the list of submission items needed to be submitted by the Contractor in order to insure the design intent will be satisfied and inclusive of all Project turnover documents and/or Contract Closeout Requirements.
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E. Contractor's Submission Schedule: The itemized list of project submission requirements printed as a report from Contract Manager. The Contractor enters the date each item needs to be submitted in order to meet the CPM schedule and returns this document to the Owner.
A. Submittal Schedule: The Contractor's Submission Schedule is attached to this section, prepared by the Design Professional. The Contractor is to coordinate and cooperate with the Owner and Design Professional to arrange in chronological order by dates required by the construction schedule. Coordinate time required for review, ordering, manufacturing, fabrication, and delivery to establish dates. Coordinate additional time required for making corrections or modifications to submittals noted by the Design Professional and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate the Contractor's Submission Schedule with list of subcontracts, the schedule of values, and coordinated CPM schedule.
2. Initial Submittal: Submit in accordance with start-up CPM 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 in accordance with the complete CPM schedule.
   a. Coordinate with the Owner and Design Professional revised Contractor's Submission Schedule to reflect changes in current status and timing for submittals.

B Format for Submittals: Submit required submittals in electronic (PDF) file format.

A. Design Professional's Digital Data Files: Electronic copies of CAD Drawings of the Contract Drawings will not be provided by the Design Professional for the Contractor's use in preparing submittals.

Coordination: Coordinate preparation and processing of submittals with the performance of the Work.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Commissioning Authority will review submittals applicable to systems being commissioned for compliance with commissioning needs, concurrent with the Design Professional review and approval.
3. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
4. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
5. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
   a. Submit Operation and Maintenance Manuals concurrent with action submittal.
   b. The Owner or Design Professional reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
B. Processing Time: Allow time for submittal review, including time for re-submittals, as follows. Time for review shall commence on the Design Professional's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including re-submittals.

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. The Design Professional will advise the Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Re-submittal Review: Allow 15 days for review of each re-submittal.
4. Sequential Review: Where sequential review of submittals by the Design Professional's consultants, the Owner, or other parties is indicated, allow 21 days for initial review of each submittal.

C. Identification and Information: Place a permanent label or title block on each paper copy submittal item for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by the Design Professional.
3. Include the following information for processing and recording action taken:
   a. Project name.
   b. Date.
   c. Name of Design Professional.
   d. Name of Construction Manager (if applicable).
   e. Name of Contractor.
   f. Name of subcontractor.
   g. Name of supplier.
   h. Name of manufacturer.
   i. Submittal number including revision identifier.
   
      1) Submittal number shall be the submittal item number and Submittal Package number designated in the Contractor's Submission Schedule.
   j. Drawing number and detail references, as appropriate.
   k. Location(s) where product is to be installed, as appropriate.
   l. Other necessary identification.

D. Identification and Information: Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
3. Provide means for insertion to permanently record the Contractor's review and approval markings and action taken by the Design Professional.
4. Include the following information on an inserted cover sheet:
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a. Project name.
b. Date.
c. Name and address of Design Professional.
d. Name of Construction Manager (if applicable).
e. Name of Contractor.
f. Name of firm or entity that prepared submittal.
g. Name of subcontractor.
h. Name of supplier.
i. Name of manufacturer.
j. Number and title of appropriate Specification Section.
k. Drawing number and detail references, as appropriate.
l. Location(s) where product is to be installed, as appropriate.
m. Related physical samples submitted directly.
n. Other necessary identification.

5. Include the following information as keywords in the electronic file metadata:
   a. Project name.
   b. Number and title of appropriate Specification Section.
   c. Manufacturer name.
   d. Product name.

E. Options: Identify options requiring selection by the Design Professional.

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

G. Additional Copies: Unless the Design Professional observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

H. Transmittal: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. The Design Professional will return submittals, without review, received from sources other than the Contractor.

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

I. Re-submittals: Make re-submittals in same form and format.
   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 the Design Professional's action stamp.

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

K. Use for Construction: Use only final submittals that are marked with approval notation from the Design Professional's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

   1. Submit electronic submittals via email as electronic (PDF) files, to the Design Professional. If applicable, the Design Professional will forward submittals to the Commissioning Authority for systems being commissioned. The Owner may request paper copies of certain submittals for onsite coordination.
   a. The Design Professional, through the Owner, will return annotated file. Annotate and retain one copy of file as an electronic Project turnover document file.
   b. The Commissioning Authority through the Design Professional will return annotated file.

   2. Operation and Maintenance Manual Submittals: Submit concurrent with the Action Submittal, as related in individual Specification Sections.

   3. Closeout Submittals: Comply with requirements specified in Section 017700 Contract Closeout Requirements and as listed in the Contractor's Submission Schedule.

   4. Permits, Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Permits, Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
GENERAL REQUIREMENTS for CONSTRUCTION

B  Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:
   a. Submittal Package number and Submittal Item number.
   b. Manufacturer's catalog cuts.
   c. Manufacturer's product specifications.
   d. Standard color charts.
   e. Statement of compliance with specified referenced standards.
   f. Testing by recognized testing agency.
   g. Application of testing agency labels and seals.
   h. Notation of coordination requirements.
   i. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:
   a. Wiring diagrams showing factory-installed wiring.
   b. Printed performance curves.
   c. Operational range diagrams.
   d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data concurrent with Samples.
6. Submit Product Data in electronic (PDF) file format.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
   a. Submittal Package number and Submittal Item number.
   b. Identification of products.
   c. Schedules.
   d. Compliance with specified standards.
   e. Notation of coordination requirements.
   f. Notation of dimensions established by field measurement.
   g. Relationship and attachment to adjoining construction clearly indicated.
   h. Seal and signature of professional engineer if specified.

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

D Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.

2. Identification: Attach label on unexposed side of Samples that includes the following:
   a. Submittal Package number and Submittal Item number.
   b. Generic description of Sample.
   c. Product name and name of manufacturer.
   d. Sample source.
   e. Number and title of applicable Specification Section.

3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
   a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
   b. Samples not incorporated into the Work, or otherwise designated as the Owner's property, are the property of the Contractor.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
   a. Number of Samples: For turnover purpose, submit six full sets of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. The Design Professional, through the Owner, will return submittal with options selected.

5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
   a. Number of Samples: Submit six sets of Samples. The Design Professional, through the Owner, will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a turnover sample.
      1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least six sets of paired units that show approximate limits of variations.

E. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
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1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.
4. Submit subcontract list in PDF electronic file, to the Owner.

F. 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. OSHA Certificates: Upon the Owner's request, submit certificates of the OSHA 10-hour Construction Safety and Health Course — S1537-A, for all laborers, workers and mechanics working on site.

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

J. Manufacturer Certificates: Upon the Owner's request, submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

K. 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.

L. 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.

M. 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.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

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

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

3.2 DESIGN PROFESSIONAL’S ACTION

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

B. Action Submittals: The Design Professional will review each submittal, make marks to indicate corrections or modifications required, and return it through the Owner. The Design Professional will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.

C. Informational Submittals: The Design Professional will review each submittal and will return it if it does not comply with requirements.

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

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

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

G. On projects that have commissioning, the Commissioning Authority will receive copies of the submittals through the Design Professional and will provide comments on the submittals via the Design Professional.

3.3 CONTRACTOR’S SUBMITTAL SCHEDULE

A. The Contractor's Submission Schedule: The Contractor's Submission Schedule, prepared by the Design Professional is attached following the end of this section. The Contractor shall provide the dates each item needs to be submitted to the Owner no later than 30 days after approval of CPM schedule. The schedule shall include the date of all shop drawings, samples, materials that shall be submitted and the date approval is required. The Contractor shall adhere to the submittal processing time as describe in paragraph 1.5 above when developing the submittal schedule. The Contractor is to coordinate and cooperate with the Owner and Design Professional to complete scheduling in accordance with the approved CPM schedule.

END OF SECTION 013300
SECTION 014000 - QUALITY AND CODE REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Contract Documents, including but not limited to, the Drawings and Individual Specification Sections and New York City (NYC) Statement of Special Inspections and Tests, apply to this Section.

1.2 SUMMARY

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

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality assurance and 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 the Contractor's other quality assurance and quality control procedures that facilitate compliance with the Contract Document requirements.

3. Requirements for the Contractor to provide quality assurance and quality control services required by the Owner or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Sections:

1. Section 013200 — Project Scheduling and Progress Documentation — Single Prime, for developing a schedule of required tests and inspections.

2. Individual Specification Sections, for specific inspections and tests requirements.

1.3 DEFINITIONS

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

B. Quality Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements.

C. Mockups: Full size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to
show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Approved mockups establish the standard by which the Work will be judged.

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

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

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

G. Installer/Applicator/Erector: The Contractor or another entity engaged by the Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

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

1.4 ACTION SUBMITTALS

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

1.5 INFORMATIONAL SUBMITTALS

A. Contractor's Quality Control Plan: For quality assurance and quality control activities and responsibilities.

B. Contractor's Quality Control Manager Qualifications: For supervisory personnel.

C. 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.

D. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
   1. Specification Section number and title.
   2. Entity responsible for performing tests and inspections.
   3. Description of test and inspection.
   4. Identification of applicable standards.
   5. Identification of test and inspection methods.
   6. Number of tests and inspections required.
7. Time schedule or time span for tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality control service.

1.6 CONTRACTOR'S QUALITY CONTROL PLAN

A. Quality Control Plan, General: Submit quality control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to the Owner. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality assurance and quality control responsibilities. Coordinate with Contractor's construction schedule.

B. Quality Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality assurance and quality control procedures similar in nature and extent to those required for Project.

1. Project quality control manager may also serve as Project superintendent.

C Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.

D. Testing and Inspection: Include in quality control plan a comprehensive schedule of the Work requiring tests or inspections, including the following:

1. The Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and the Contractor-elected tests and inspections.
2. Special inspections required by authorities having jurisdiction and indicated on the "NYS or NYC Statement of Special Inspections and Tests."

E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.

F Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work the Owner has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.7 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
GENERAL REQUIREMENTS for CONSTRUCTION

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.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

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

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

1.8 PERMITS, LICENSES, AND CERTIFICATES:

A. The Contractor shall obtain, maintain and pay for all applications, permits, filings, and licenses necessary for the execution of the Work and for the use of such Work when completed as required by any and all authorities having jurisdiction. The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and lawful orders of authorities having jurisdiction bearing on performance of the Work.

B. The Contractor shall promptly assist the Owner in securing all approvals from authorities having jurisdiction. Without limitation, the Contractor shall assist the Owner in making
application for Project approval, variances or other approvals, Letters of Completion, Temporary Certificates of Occupancy, and Certificates of Occupancy, including completion of all necessary applications and supporting documentation.

C. The Contractor shall comply with all regulations governing conduct, access to the premises, operation of equipment and systems and conduct while in or near the premises and shall perform the Work in such a manner as not to unreasonably interrupt or interfere with the conduct of business of the Institution.

D. For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, material certificates/affidavits, approvals, 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.

E. Dormitory Authority Permits: Prior to commencement of the Work, the Dormitory Authority shall provide the Contractor, at no costs, a Construction Permit for performance of the Work and post a copy at the Project site.

1. The Contractor shall secure and pay for all other work permits, applications, filings, and approvals that are associated with the Work of the Contract and pay all other permits, fees, licenses and inspections necessary for the proper execution and completion of the Contract as required by all other applicable authorities having jurisdiction.

2. Each Electrical Contractor shall, at no additional costs to the Owner, provide for inspection of all electrical Work of the Contract and provide a certificate of compliance from an independent electrical inspection agency acceptable to the Owner.

F. New York City Permits: The Contractor shall secure and pay for all work permits, applications, filings, and approvals that are associated with the Work of the Contract and pay all other permits, fees, licenses and inspections necessary for the proper execution and completion of the Contract as required by applicable New York City agencies and departments (i.e. Department of Buildings, Bureau of Electrical Control, Fire Department, Department of Environmental Protection, etc.).

1. The Contractor shall secure required work permits and approvals prior to commencement of the Work, provide a copy to the Owner and post a copy of the permit at the Project site.

2. The Contractor shall be responsible to maintain updated work permits and approvals.

3. Upon Substantial Completion of the Work of the Contract, the Contractor shall secure all required approvals from applicable New York City agencies and departments. The Contractor shall provide a copy to the Owner.

G. Municipal Permits: The Contractor shall secure and pay for a building permit and all work permits, applications, filings, and approvals that are associated with the Work of the Contract and pay all other permits, fees, licenses and inspections necessary for the proper execution and completion of the Contract as required by applicable authorities having jurisdiction.

1. The Contractor shall secure required building permit or work permits and approvals prior to commencement of the Work, provide a copy to the Owner and post a copy of the permit at the Project site.

2. The Contractor shall be responsible to maintain updated permits and approvals.
3. Upon Substantial Completion of the Work of the Contract, the Contractor shall secure all required approvals from applicable authorities having jurisdiction. The Contractor shall provide a copy to the Owner.

1.9 QUALITY ASSURANCE

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

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

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

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

E. Specialists: Certain Specification Sections 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.

F. Testing Agency Qualifications: 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.

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

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

I. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by the Owner.
2. Notify the Owner seven days in advance of dates and times when mockups will be constructed.
3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at the Project.
4. Demonstrate the proposed range of aesthetic effects and workmanship.
5. Obtain the Owner's approval of mockups before starting work, fabrication, or construction.
   a. Allow seven days for initial review and each re-review of each mockup.
6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
7. Demolish and remove mockups when directed by the Owner.

1.10 QUALITY CONTROL

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

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

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 Submittal Procedures.

D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and
GENERAL REQUIREMENTS for CONSTRUCTION

conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

E. Retesting/Reinspecting:

1. Regardless of whether original tests or inspections were the Contractor's responsibility, provide quality control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents, or costs attributable to the Contractor's lack of coordination in properly scheduling the Work requiring testing and inspection will be charged to Contractor and the Contract Sum will be adjusted by Change Order.

F. Testing Agency Responsibilities: Cooperate with the Owner and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify the Owner 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 written report, in duplicate, of each test, inspection, and similar quality control service through Contractor.
5. Does 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 the Contractor.

G. Associated Services: The Contractor shall 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. The Contractor shall provide the following:

1. Access to the Work, including equipment required to access the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality assurance and 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.
GENERAL REQUIREMENTS for CONSTRUCTION

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.

1. Distribution: Distribute schedule to the Owner, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.11 NYC SPECIAL INSPECTIONS AND TESTS

A. Special Inspections and Tests: The Owner will engage a qualified testing agency to conduct special inspections and tests required by authorities having jurisdiction as the responsibility of the Owner, as indicated in the NYC Statement of Special Inspections and Tests, attached to this Section, and as follows:

1. Notifying Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
2. Submitting a written report of each test, inspection, and similar quality control service to the Owner with copy to the Contractor and to authorities having jurisdiction. Frequency of reporting shall be determined in consultation with the Owner.
3. Submitting a final report of special tests and inspections at Substantial Completion, this includes a list of unresolved deficiencies.
4. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents or code requirements.
5. Retesting and reinspecting corrected work.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve a Contractor of responsibility for compliance with the Contract Document requirements.

1. Specified tests, inspections, and related actions do not limit Contractor's quality control procedures that facilitate compliance with the Contract Document requirements.
2. Inspections and tests performed by the testing agency shall in no way relieve the Contractor of the responsibility to construct in accordance with the Contract Documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to the Design Professional.
4. Identification of testing agency or special inspector conducting test or inspection.
GENERAL REQUIREMENTS for CONSTRUCTION

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

3.2 REPAIR AND PROTECTION

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

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

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

END OF SECTION 014000
SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Contract Documents, including but not limited to, the Drawings and Individual Specification Sections, apply to this Section.

1.2 SUMMARY

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

B. Related Sections:
   1. Section 011200 Contract Summary of Work, for work restrictions and limitations on utility interruptions.

1.3 USE CHARGES

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

1.4 INFORMATIONAL SUBMITTALS

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

B. Erosion and Sedimentation Control Plan: Show compliance with requirements of New York State Department of Environmental Conservation Stormwater General Permit or authorities having jurisdiction, whichever is more stringent.

C. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage; including delivery, handling, and storage provisions for materials subject to water absorption or water damage, discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water damaged Work.

1. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, 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.
GENERAL REQUIREMENTS for CONSTRUCTION

D. Dust-Control and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust-control 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 the work.
2. HVAC system isolation schematic drawing.
3. Location of proposed air filtration system discharge.
4. Other dust-control measures.
5. Waste management plan.

1.5 QUALITY ASSURANCE

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

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

C. Accessible Temporary Egress: Comply with applicable provisions in ADA-ABA Accessibility Guidelines and ANSI A117.1.

1.6 PROJECT CONDITIONS

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

PART 2 - PRODUCTS

2.1 MATERIALS

A. Chain-Link Fencing: Minimum 0.148-inch thick, galvanized steel, chain-link fabric fencing; minimum 8 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.

B. Portable Chain-Link Fencing: Minimum 0.148-inch thick, galvanized steel, chain-link fabric fencing; minimum 8 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.

C. Wood Enclosure Fence: Plywood, 8 feet high, framed with four 2-by-4-inch rails, with preservative-treated wood posts spaced not more than 8 feet apart.
GENERAL REQUIREMENTS for CONSTRUCTION

D. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10 mils minimum thickness, with flame-spread rating of 15 or less per ASTM E 84.

E. Dust Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches.

F. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 TEMPORARY FACILITIES

A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

1. Store combustible materials apart from building.

2.3 EQUIPMENT

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

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. 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 by progress of the Work.

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

3.2 TEMPORARY UTILITY INSTALLATION

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

1. Arrange with utility company, the Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction. Obtain all required permits.
C. Water Service: Connect to the Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to the Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

D. Sanitary Facilities: Provide drinking water for use of construction personnel.
   
   1. Toilets: Use of the Owner's existing toilet facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to the Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

E. Heating and Cooling: 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.

F. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.

   1. Prior to commencing work, isolate the HVAC system in area where work is to be performed in accordance with approved coordination drawings.
      
      a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
      b. Maintain negative air pressure within work area using HEPA-equipped air filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.

   2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust containment devices.

   3. Perform daily construction cleanup and final cleanup using approved, HEPA-equipped vacuum equipment.

G. 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.

H. Electric Power Service: Connect to the Owner's existing electric power service. Maintain equipment in a condition acceptable to the Owner. Obtain all required permits.

   1. Connect temporary service to the Owner's existing power source, as directed by the Owner.

I. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

   1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

   2. Install lighting for the Project identification sign.
GENERAL REQUIREMENTS for CONSTRUCTION

J. Telephone Service: Provide temporary telephone service in Owner's-use facilities for use by all construction personnel. Install two telephone lines for each field office.

1. Provide superintendent with cellular telephone for use when away from field office.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

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

B. Temporary Use of Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.

1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
2. Prepare subgrade and install subbase and base for temporary roads and paved areas specified in Individual Specification Sections.
3. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course.

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

1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

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

E. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain the Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding the Project or adjoining properties nor endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations.

F. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Identification Signs: Provide Project identification signs as specified in the Contract Documents.
2. Temporary Signs: Provide other signs as required to inform public and individuals seeking entrance to the Project.
GENERAL REQUIREMENTS for CONSTRUCTION

a. Provide temporary, directional signs for construction personnel and visitors.

3. Maintain and touchup signs so they are legible at all times.


H. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

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

1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.

J. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

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

B. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to authorities having jurisdiction.

1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
2. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from the project site during the course of the project.
4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

C. 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.
D. Tree and Plant Protection: Install temporary fencing outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

E. Site Enclosure Fence: Before construction operations begin 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 the Owner.

F. 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.

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

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

I. Covered Walkway: Erect protective, covered walkway for passage of individuals through or adjacent to Project site. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction.
   1. Construct covered walkways using scaffold or shoring framing.
   2. Provide overhead decking, protective enclosure walls, handrails, barricades, warning signs, exit signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.
   3. Paint and maintain appearance of walkway for duration of the Work.

J. 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.
   1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

K. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by the Owner from fumes and noise.
   1. Construct dustproof partitions with fire rated gypsum wallboard with joints taped on occupied side, and fire-retardant plywood on construction operations side.
   2. Where fire-resistance-rated temporary partitions are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
   3. Insulate partitions to control noise transmission to occupied areas.
   4. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
   5. Protect air-handling equipment.
GENERAL REQUIREMENTS for CONSTRUCTION

6. Provide walk-off mats at each entrance through temporary partition.

L. Fire Safety During Construction: Comply with all requirements identified herein as well as the more stringent requirements of the applicable codes (New York State Building and Fire Codes or New York City Building and Fire Codes).

1. No smoking: Smoking shall be prohibited throughout the project/construction site. “No Smoking” signs shall be conspicuously posted at all entrances and throughout the site.

2. The Contractor shall designate a Fire Prevention Program Superintendent/ Fire Safety Manager who shall be responsible for all fire safety efforts until completion and acceptance of the Work described in the Contract Documents that include but are not limited to the following:
   a. Prefire Plans. Develop in cooperation with the local Fire Chief and Fire Code Official. Any changes affecting the utilization of information contained in the plan shall result in notification to the local Fire Chief and Fire Code Official.
   b. Training. Job site personnel shall be trained in fire safety practices and procedures and the proper use of fire protection equipment, including hand-held fire extinguishers, hose lines, fire alarm and sprinkler systems.
   c. Fire Protection Devices. Fire protection and detection equipment shall be maintained and serviced.
   d. Hot Work Operations. Welding, cutting, open torches, torch-applied roof system activities, and other hot work operations shall be conducted under a permit system. A fire watch and fire extinguishers shall be provided.
   e. Impairment of Fire Protection Systems. Coordinate planned, emergency or accidental impairments of fire protection systems to include tagging of impaired systems and notification of Fire Department, Alarm Company, Building Owner/Operator, and Contractors.
   f. Temporary Covering of Fire Protection Devices. Coverings placed on or over fire protection devices for protection from damage shall be immediately removed upon the completion of the Work in the room or area in which the devices are installed.

3.5 MOISTURE AND MOLD CONTROL


B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne 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.

C. Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
GENERAL REQUIREMENTS for CONSTRUCTION

1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
2. Keep interior spaces reasonably clean and protected from water damage.
3. Periodically collect and remove waste containing cellulose or other organic matter.
4. Discard or replace water-damaged material.
5. Do not install material that is wet.
6. Discard, replace or clean stored or installed material that begins to grow mold.
7. 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 daily readings over a forty-eight hour period. Identify materials containing moisture levels higher than allowed. Report findings in writing to the Design Professional.
4. Remove materials that cannot be completely restored to their manufactured moisture level within 48 hours.

3.6 OPERATION, TERMINATION, AND REMOVAL

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

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

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

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

3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700—Contract Closeout Requirements.

END OF SECTION 015000
SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Contract Documents, including but not limited to, the Drawings and Individual Specification Sections and Contractor's Submittal Schedule, apply to this section.

1.2 SUMMARY

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

B Related Sections:
1. Section 013300 — Submittal Procedure, for product submittals.

1.3 DEFINITIONS

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

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

B Procurement Exemption Approval Product Specification: A specification in which a specific manufacturer's product is named including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes as a single source or sole source provider.

1.4 ACTION SUBMITTALS

A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
GENERAL REQUIREMENTS for CONSTRUCTION

1. Include data to indicate compliance with the requirements specified in "Comparable Products" from Article 5, Section 5.04 of the General Conditions.
2. Design Professional's Action: If necessary, the Design Professional will request additional information or documentation for evaluation within one week of receipt of a comparable product request. The Design Professional will notify the Contractor through the Owner of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
   a. Form of Approval: As specified in Section 013300 - Submittal Procedure.
   b. Use product specified if the Design Professional does not issue a decision on use of a comparable product request within time allocated.

B Procurement Exemption Approval Product Specification Submittal: Comply with requirements in Section 013300 - Submittal Procedure. Show compliance with requirements.

1.5 QUALITY ASSURANCE

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

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

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

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

C. Storage:
   1. Store products to allow for inspection and measurement of quantity or counting of units.
GENERAL REQUIREMENTS for CONSTRUCTION

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

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve the 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 the Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for the 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. Refer to individual specification sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 013300 — Submittal Procedure.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and 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. The 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," the Design Professional will make selection.
GENERAL REQUIREMENTS for CONSTRUCTION


6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

7. Provide products that do not contain asbestos.

B. Product Selection Procedures:

1. Product: Where Specifications include a procurement exemption approval and name a single source, sole source, manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for the Contractor's convenience will not be considered.

2. Manufacturer/Source: Where Specifications include a procurement exemption approval and name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for the Contractor's convenience will not be considered.

3. Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.

4. Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.

C. Visual Matching Specification: Where Specifications require "match sample", provide a product that complies with requirements and matches sample. The Owner's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.

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

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration: The Design Professional will consider the Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, the Design Professional may return requests without action, except to record noncompliance with these requirements:

1. Action Submittal shall be provided in accordance with Submittal Procedures within 60 days after Notice to Proceed.
2. Evidence that the proposed product does not require revisions to the Contract Documents that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
3. Detailed comparison of qualities of proposed product with those named in the Specifications, including attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
4. Evidence that proposed product provides specified warranty.
5. List of similar installations for completed projects with project names and addresses and names and addresses of design professionals and owners, if requested.
6. Samples, if requested.

B. Comparable Products Costs: Any costs savings to an approved Comparable Product identified and realized by the Contractor shall be shared equal between the Owner (50%) and Contractor (50%).

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000
SECTION 017329 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Contract Documents, including but not limited to, the Drawings and Individual Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

B. Responsibility: Each Contractor is responsible for the cutting and patching to permit installation or performance of Work of their contract.

C. Related Sections include the following:
   1. Individual Specification Sections.

1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of Work of the contract.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of Work of the contract.

1.4 SUBMITTALS

A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:

   1. Extent: At each occurrence, describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
   2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
   3. Products: List products to be used and firms or entities that will perform the Work.
   4. Dates: Indicate when cutting and patching will be performed.
   5. Utility Services and Mechanical/Electrical Systems: List services/systems that cutting and patching procedures will disturb or affect. List services/systems that will be relocated and those that will be temporarily out of service. Indicate how long services/systems will be disrupted.

CUTTING AND PATCHING
6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.

7. Design Professional's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.5 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that result in increased maintenance or decreased operational life or safety.

C. Fire Rated Elements: Do not cut and patch fire rated elements (i.e. floors, walls, roofs, shafts, etc.) in a manner that results in reducing their capacity to perform as intended or that results in decreased fire rating.

D. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, which results in reducing their capacity to perform as intended, or that result in increased maintenance or decreased operational life or safety.

E. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Design Professional's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

F. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including other trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.6 WARRANTY

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

PART 2 - PRODUCTS

2.1 MATERIALS

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

C. Fire Rated Elements: Provide firestopping products/systems specified in system design listings by approved testing agencies that conform to the construction type, penetrating item, annular space requirements and fire rating involved in each separate assembly. Refer to applicable Individual Specification Sections.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
   1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
   2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

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

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

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

3.3 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
   1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
B Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete or Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
5. Proceed with patching after construction operations requiring cutting are complete.

C Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
   a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
   b. Restore damaged pipe covering to its original condition.
3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
   a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.
6. Fire Rated Elements: Install firestopping systems to comply with applicable Individual Specification Sections and firestopping manufacturer's written installation instructions and published drawings for products and applications.
D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 017329
GENERAL REQUIREMENTS for CONSTRUCTION

SECTION 017700 — CONTRACT CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Contract Documents, including but not limited to, the Drawings and Individual Specification Sections and Notice of Substantial Completion (NOSC) Form, apply to this section.

1.2 SUMMARY

A. Section includes administrative requirements for preparation and submission of final Contract Closeout Documents, including, but not limited to, the following:

1. Contract Closeout Meeting
2. Notice of Substantial Completion (NOSC) Requirements
   a. List of Incomplete Work Items
   b. Contract Turnover Documents
      1) As-built Drawings
      2) As-built Specifications
      3) As-built Schedule
      4) Permits, Licenses and Certificates
      5) Hazardous Wastes Documents
      6) Commissioning Authority's Deficiency Log
   c. General Guarantee
   d. Operation and Maintenance Manuals
3. Contract Closeout
4. Final Cleaning

B Related Sections:

1. General Conditions, Article 8 — Payment
2. General Conditions, Article 13 Inspection and Acceptance
3. Section 014000 Quality and Code Requirements
4. Section 017823 Operation and Maintenance Manuals
5. Section 017839 — As-built Documents

1.3 CONTRACT CLOSEOUT Meeting

A. Contract Closeout Meeting: The Owner will schedule and conduct a Contract closeout meeting, at a time convenient to the Owner and Design Professional, but no later than sixty (60) days prior to the scheduled inspection date for Substantial Completion.

1. The Owner will conduct the meeting to review requirements and responsibilities related to Contract closeout.
2. Attendees: Representatives of the Owner, testing agency, commissioning authority, Design Professional, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to make binding decisions on matters relating to the Work.

3. Agenda: Discuss items of significance that could affect or delay Contract closeout, including the following:
   b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
   c. Requirements for preparing sustainable documentation.
   d. Requirements for submitting final operation and maintenance manual.
   e. Requirements for Permits, Licenses and Certificates.
   f. Preparation of Contractor's list of incomplete Work items.
   g. Procedures for processing Application for Payment at Substantial Completion and final payment.
   h. Submittal procedure.
   i. Installation of the Owner's furniture, fixtures, and equipment.
   j. Responsibility for removing temporary facilities and controls.

4. Minutes: The Owner or Design Professional will record and distribute meeting minutes.

1.4 NOTICE OF SUBSTANTIAL COMPLETION (NOSC)

A. Substantial Completion: After the Work of the Contract is determined by the Owner, to be at Substantial Completion, the Contractor shall submit a written request to the Owner for a date of inspection. The date of Substantial Completion establishes the start of the guarantee period.

B. Documentation: The Notice of Substantial Completion (NOSC) form shall be executed at the end of inspection documenting incomplete Work items and submission of documents in accordance with this section that includes but is not limited to:
   a. Preparation of a list of Work to be completed and corrected, the value of Work items on the list, and completion date of each Work item.
   b. Submittal of contract turnover documents.
   c. Submittal of operation and maintenance manuals, testing, adjustment and balance records.
   d. Delivery of tools, spare parts, extra materials, and similar items to location designated by the Owner. Label with manufacturer's name and model number where applicable.
   e. Make final changeover of permanent locks and deliver keys to the Owner. Advise the Owner of changeover.
   f. Termination and removal of temporary facilities from Project site, along with mockups, construction tools, and similar elements.
   g. Completion of final cleaning requirements.
1.5 LIST OF INCOMPLETE ITEMS

A. Organization of List: Submit list of incomplete items in EXCEL spreadsheet electronic format. 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 items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

2. Include the following information at the top of each page:
   a. Project name & number.
   b. Date.
   c. Name of Contractor & Contract number.
   d. Page number.

B. Reinspection: Submit a written request for reinspection. On receipt of request, the Owner will either proceed with inspection or notify the Contractor of unfulfilled requirements. After inspection, the Owner will notify the Contractor of items, either on the Contractor's list or additional items identified, that must be completed or corrected.

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

2. Results of completed inspection will form the basis to proceed with commencement of Contract Closeout Documents.

1.6 CONTRACT TURNOVER DOCUMENTS

A. Procedure: Contract turnover documents shall be transmitted to the Owner or if stated to the Design Professional, fifteen (15) days prior to requesting inspection date for Substantial Completion.

B. As-built Drawings: Transmit one paper copy set of marked-up As-built Drawings to the Design Professional, with copy of transmittal to Owner. Print each Drawing, whether or not changes and additional information were recorded.

C. As-built Specifications: Transmit one paper copy set of marked-up as-built specifications, including addenda and contract modifications to the Design Professional, with copy of transmittal to Owner.

D. As-built Schedule: Submit one electronic (PDF) copy, certified by the Contractor, of the schedule that reflects the exact manner in which the project was actually constructed, to the Owner.

E. Permits, Licenses and Certificates Documents: Submit one copy of original permits, licenses, certifications, inspection reports, material certificates/affidavits, approvals, and related documents required by authorities having jurisdiction to obtain Letter of Completion, Certificate of Occupancy, or Code Compliance Certificate. Coordinate and respond to requirements from the Owner, NYC Department of Buildings, or Municipality and all other authorities having jurisdiction for issuance of approval/documents required for the Owner use and occupancy.
GENERAL REQUIREMENTS for CONSTRUCTION

1. Cooperate and help coordinate with agency testing materials as specified in Section 014000 Quality and Code Requirements. Testing Agency is required to submit final report of special inspections.
2. The Contractor to provide one copy of original certification from agency or firm certifying the following and as required by Individual Specification Sections:
   a. Fire Alarm System— NFPA 72 Form for;
      1) Record of Completion
   b. Electrical — Certification Form from;
      1) Authority having jurisdiction
      2) Independent electrical inspection agency acceptable to the Owner

F. Hazardous Waste Documents: Submit four (4) paper copies of documents to the Owner thirty (30) days prior to requesting inspection date for Substantial Completion. Refer to Individual Specification Sections for all requirements.

G. Miscellaneous Record Submittals: Refer to Individual Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit one electronic (PDF) copy of each submittal.

H. Reports: Submit written report indicating items incorporated in Contract Documents concurrent with progress of the Work, including modifications, concealed conditions, field changes, product selections, and other notations incorporated.

1.7 GUARANTEE

A. General Guarantee: Comply with General Conditions, Article 13 — Inspection and Acceptance. The date established on the Notice of Substantial Completion form constitutes commencement of the Guarantee period.

1.8 OPERATION AND MAINTENANCE MANUALS

A. Final Manuals Submittal: Submit an electronic copy of a compiled set of complete Operation and Maintenance Manuals in final form as indicated in Section 017823 — Operation and Maintenance Manuals, to the Owner fifteen (15) days prior to requesting date of inspection for Substantial Completion.

1.9 CONTRACT CLOSEOUT (same as final application for payment)

A. Contract Compliance: The Contractor shall comply with the requirements of General Conditions, Section 10.08 — Limitations on Actions.

B. Preliminary Procedure: All Work and Extra Work of the Contract and requirements of this section must be complete and approved prior to commencement of Contract closeout.
   1. The Contractor shall request and submit to the Owner a final Contractor's Pencil Copy billing request that will formulate the final Application for Payment.
   2. The Contractor shall provide outstanding documentation to the Owner in accordance with General Conditions, Article 20 — Opportunity Programs.
GENERAL REQUIREMENTS for CONSTRUCTION

C. Procedures: Upon the Owner's approval of the Contractor's Pencil Copy billing request, Contract closeout documents will be provided to the Contractor. The Contractor shall complete each document and submit all documents with original signature & notary as indicated on forms, the following:

1. Final Application for Payment that includes remaining Retainage.
3. Contractor and Subcontractor Certifications Form.
4. Contractor's Certified Payroll Form.
5. Release Form -- Final Payment to Contractor.
6. Consent of Surety -- Final Payment to Contractor, with power of attorney.

D. Payroll Forms: The Contractor and all Sub-contractors to the Contractor shall submit original copies of the Contractor and Subcontractor Certifications Form and Contractor's Certified Payroll Form.

PART 2 - PRODUCTS

2.1 CLEANING MATERIALS

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

1. Use cleaning products that meet Green Seal GS-37, or if GS-37 is not applicable, use products that comply with allowable VOC levels.

PART 3 - EXECUTION

3.1 DEMOBILIZATION

A. Deliver tools, spare parts, extra materials, and similar items to location designated by the Owner. Label with manufacturer's name and model number where applicable.

B. Make final changeover of permanent locks and deliver keys to the Owner. Advise the Owner's personnel of changeover.

C. Terminate and remove temporary facilities from the Project site, along with mockups, construction tools, and similar elements.

3.2 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for contract turnover document purposes. Post changes and modifications to contract turnover documents as they occur; do not wait until the end of the Project.
GENERAL REQUIREMENTS for CONSTRUCTION

B. Maintenance of Turnover Documents and Samples: Store turnover documents and Samples in the field office apart from the Contract Documents used for construction. Contract turnover documents shall not be used for construction purposes. Maintain turnover documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to contract turnover documents for the Owner's reference during normal working hours during performance of Contract.

3.3 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations as applies to Work of the contract.
   a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
   b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
   C. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
   d. Remove tools, construction equipment, machinery, and surplus material from Project site.
   e. Remove snow and ice to provide safe access to building.
   f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
   g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
   h. Sweep concrete floors broom clean in unoccupied spaces.
   i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain. Replace if soil or stains remain after shampooing.
   j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
   k. Remove labels that are not permanent.
   l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

   1) Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates.
GENERAL REQUIREMENTS for CONSTRUCTION

m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

n. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

0. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

p. 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.

q. Leave Project clean and ready for occupancy.

C. Construction Waste Disposal: Comply with waste disposal requirements in all other applicable sections.

END OF SECTION 017800
SECTION 017823 - OPERATION AND MAINTENANCE MANUALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. The Contract Documents, including but not limited to, the Drawings and Individual Specification Sections and Contractor's Submission Schedule, apply to this Section.

1.2 SUMMARY
A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
   1. Operation and maintenance manual for systems, subsystems, and equipment.
   2. Product maintenance data.
   3. Systems and equipment maintenance data.
B. Related Sections:
   1. Section 013300 — Submittal Procedures
   2. Section 017700 — Contract Closeout Requirements
   3. Section 019113 — General Commissioning Requirements

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

1.4 CLOSEOUT SUBMITTALS
A. Required Manuals: see Section 017700 — Contract Closeout Requirements for additional requirements.
B. Format: Submit operations and maintenance manuals in the following format:
      a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
      b. Enable inserted reviewer comments on draft submittals.
PART 2 - PRODUCTS

2.1 REQUIREMENTS FOR OPERATION, AND MAINTENANCE MANUALS

A. Organization: Organize the manual into separate sections by CSI number based on the table of contents of the project manual, for each system and subsystem, and a separate section for each piece of equipment not part of a system. The manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents:
   a. Operation data.
   b. Product maintenance data.
   c. Systems and equipment data

B Title Page: Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name and contact information for Contractor.
6. Name and contact information for Construction Manager.
7. Name and contact information for Design Professional.
8. Name and contact information for Commissioning Agent.
9. Names and contact information for major consultants to the Design Professional that designed the systems contained in the manuals.
10. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one media volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents by CSI Section number and then by system, subsystem, and equipment.

E. Manuals, Electronic Copy: Submit electronic (PDF) copy of the manual, to the Design Professional, concurrent with Action Submittal.

2.2 OPERATION DATA

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Section and the following information:
GENERAL REQUIREMENTS for CONSTRUCTION

2. Operating standards.
3. Operating procedures.
4. Operating logs.
5. Wiring diagrams.
6. Control diagrams.
7. Piped system diagrams.
8. Precautions against improper use.
9. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:

1. Product name and model number. Use designations for products indicated on Contract Documents.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.3 PRODUCT MAINTENANCE DATA

A. Content: Organize data into a separate section, within the O & M Manual, for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in section identified by product name and arranged to match manual's table of contents. For each product, list name, address, and
telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Guarantees: Include copies of warranties and guarantees lists of circumstances and conditions that would affect validity of warranties.

1. Include procedures to follow and required notifications for warranty claims.

2.4 SYSTEMS AND EQUIPMENT MAINTENANCE DATA

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in a separate section within the O & M Manual identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Manufacturers' Maintenance Documentation: Manufacturers’ maintenance documentation including the following information for each component part or piece of equipment:

1. Standard maintenance instructions and bulletins.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.
D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training video recording, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Warranties: Include copies of warranties and lists of circumstances and conditions that would affect validity of warranties.

1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Operation and Maintenance Documentation shall be provided for review, concurrent, with Action Submittal specified in Individual Specification Section.

1. Correct or modify the manual to comply with the Design Professional's and Commissioning Authority's comments. Submit copies of each corrected manual within 15 days of receipt of Design Professional's and Commissioning Authority's comments and prior to commencing demonstration and training.

B. Product Maintenance Data: Assemble a complete set of maintenance data, in a separate section, within the O & M Manual, indicating care and maintenance of each product, material, and finish incorporated into the Work.

C. Operation and Maintenance Data: Assemble a complete set of operation and maintenance data, in a separate section, within the O & M Manual, indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.

2. Prepare a separate section within the O & M Manual, for each system and subsystem, in the form of an instructional manual for use by operating personnel.

D. Manufacturers' Data: Where manual contain manufacturers' standard printed data; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in As-built Drawings to ensure correct illustration of completed installation.

1. Do not use original project record documents as part of operation and maintenance manuals.

END OF SECTION 017823
SECTION 017839 — AS BUILT DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Contract Documents, including but not limited to, the Drawings and Individual Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for As-built documents, including the following:

1. As-built Drawings
2. As-built Specifications
3. As-built Schedule
4. Record Product Data
5. Miscellaneous record submittals

B. Related Sections:

1. Section 013200 — Construction Progress Documentation
2. Section 013300 — Submittal Procedure; Required Submittal List
3. Section 017700 — Contract Closeout Requirements
4. Section 017823 — Operation and Maintenance Manuals

C. Administrative and procedural requirements for contract turnover documents, including, but not limited to the following, as provided in Individual Specifications Sections.

1. Commissioning Documents
2. Hazardous Waste Documents

1.3 CLOSEOUT SUBMITTALS

A. Required Documents: Section 017700 Contract Closeout Requirements, describes administrative requirements for submission, number and type of copies required for contract closeout requirements.

PART 2 - PRODUCTS

2.1 AS-BUILT DRAWINGS

A. As-built Drawings: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings onsite. Review As-built Drawings and shop drawings monthly with the Owner, for approval.
GENERAL REQUIREMENTS for CONSTRUCTION

1. Preparation: Daily mark As-built Drawings to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up As-built Drawings.
   a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
   b. Accurately record information in an acceptable drawing technique.
   c. Record data as soon as possible after obtaining it.
   d. Record and check the markup before enclosing concealed installations.

2. Content: Types of items requiring marking include, but are not limited to, the following:
   a. Dimensional changes to Drawings.
   b. Revisions to details shown on Drawings.
   c. Depths of foundations below first floor.
   d. Locations and depths of underground utilities.
   e. Revisions to routing of piping and conduits.
   f. Revisions to electrical circuitry.
   g. Actual equipment locations.
   h. Duct size and routing.
   i. Locations of concealed internal utilities.
   j. Changes made by Change Order.
   k. Changes made by Bulletin.
   l. Changes made following the Owner's written orders.
   m. Details not on the original Contract Drawings.
   n. Field records for variable and concealed conditions.
   o. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Utilize personnel proficient at recording graphic information in production of marked-up as-built prints.
4. Mark as-built sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

2.2 AS-BUILT SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
GENERAL REQUIREMENTS for CONSTRUCTION

4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.

5. Note related Change Orders, record Product Data, and turnover Drawings where applicable.

2.3 AS-BUILT SCHEDULE

A. Final Schedule: Submit to the Owner a final schedule update. The As-built Schedule shall reflect the exact manner in which the project was actually constructed including actual start and finish dates, activities, sequences and logic.

1. The Contractor shall certify the final schedule update as being a true reflection of the way the project was actually constructed.

2.4 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to the Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, As-built Specifications, and As-built Drawings where applicable.

2.5 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by Individual Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals.

1. Include miscellaneous record submittals directory organized by specification section number and title, electronically linked to each item of miscellaneous record submittals.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Maintain Change Log: Maintain and submit written change log to the Owner, monthly for review indicating items incorporated in contract turnover documents concurrent with progress of the Work, including modifications, concealed conditions, field changes, product selections, and other notations incorporated.
GENERAL REQUIREMENTS for CONSTRUCTION

B. Recording: Maintain one copy of each submittal during the construction period for contract turnover document purposes. Post changes and modifications to contract turnover documents as they occur; do not wait until the end of the Project.

C. Maintenance of Turnover Documents and Samples: Store turnover documents and Samples in the field office apart from the Contract Documents used for construction. Contract turnover documents are not to be used for construction purposes. Maintain turnover documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to contract turnover documents for the Owner's reference during normal working hours during performance of Contract.

END OF SECTION 017839
SECTION 019113 - GENERAL COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
   A. The Contract Documents, including but not limited to, the Drawings and Individual Specification Sections and the Commissioning Plan, apply to this Section.

1.2 SUMMARY
   A. Section includes general, procedural, and administrative requirements that apply to implementation of commissioning.

   B. General Provisions for Commissioning:
      1. Selected building systems and equipment to be commissioned are identified in Division 24.
      2. The commissioning process shall be directed by the Commissioning Authority, provided by the Owner.
      3. The responsible Contractor shall act as the Commissioning Agent, and shall be responsible for executing the commissioning process as directed by the Commissioning Authority, and as defined in Division 24.
      4. The commissioning process is defined in Division 24 and includes responsibilities for each Commissioning Team member including the Commissioning Agent.

   C. Related Sections:
      1. Specification Sections referenced in Division 24, Commissioning, apply to this Section.

   D. References:
      1. Owner's Project Requirements (OPR), Basis of Design (BoD), and Design Intent (DI) documents.
      2. ASHRAE Guideline 0-2005: The Commissioning Process

1.3 DEFINITIONS
   A. Basis of Design (BoD): A document prepared by the Design Professional that records how the designer has met the owner's project requirements. It includes the concepts, calculations, decisions, and product selections and how applicable regulatory requirements, standards, and guidelines have been met. The document includes descriptions and lists of individual items that support the design process.
B. Commissioning (Cx): A quality assurance process that documents specified systems and components are provided and tested to meet the Owner's needs and the design intent in accordance with the Contract Documents.

C. Commissioning Agent (CA): The Contractor. For the purposes of commissioning the Contractor shall assume the role, tasks, and responsibilities of the Commissioning Agent. Note that per the Owner's Building Commissioning Guidelines, the Owner does not allow the Commissioning Authority and Commissioning Agent to be the same organization or person. The Commissioning Agent shall assign a representative with expertise and authority to act on its behalf to participate in the commissioning process.

D. Commissioning Authority (CxA): The Professional, appointed by the Owner, to direct and coordinate the commissioning process.

E. Commissioning Plan (Cx Plan): A document, prepared by the Commissioning Authority, defining the commissioning process including schedules, responsibilities, documentation requirements, and functional performance test requirements.

F. Commissioning Team: Individuals and entities, as deemed appropriate by the CxA, appointed by the Owner and Contractor, having the authority to act on their behalf, explicitly organized to implement the commissioning process, through coordinated action and defined in the contract documents and the Commissioning Plan.

G. Design Intent (DI): A document prepared by the Design Professional that summarizes design goals of the design phase.

H. Owner's Project Requirements (OPR): A document prepared by the Design Professional that defines the functional requirements and the expectations for operation.

I. Systems and Energy Management Manual: A composite document that expands the scope of the operation and maintenance manual by including additional information gathered by the commissioning process as required by the New York State Green Building Tax Credit, Section 638.8 (k)(2).

1.4 COMMISSIONING TEAM

A. The Commissioning Team shall consist of, but not be limited to, the Owner, Design Professional, Commissioning Authority, Commissioning Agent, suppliers, and specialists, in accordance with the Commissioning Plan.
SECTION 024119 – SELECTIVE DEMOLITION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:
   1. Demolition and removal of selected portions of building or structure.
   2. Demolition and removal of selected site elements.
   3. Salvage of existing items to be reused or recycled.

1.03 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.

C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.

D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.04 MATERIALS OWNERSHIP

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

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition shall remain the property of Owner.
   1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.05 PREINSTALLATION MEETINGS

A. Predemolition Conference: Conduct conference at Project site.
   1. Inspect and discuss condition of construction to be selectively demolished.
   2. Review structural load limitations of existing structure.
   3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
   4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
   5. Review areas where existing construction is to remain and requires protection.
   6. Review procedures for turning over salvaged materials to the Owner and protected off-site storage of materials to be reused in the work of the project.
SECTION 024119 – SELECTIVE DEMOLITION

1.06 INFORMATIONAL SUBMITTALS

A. Qualification Data: For refrigerant recovery technician.

B. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting the public, pedestrian access and circulation areas and property, for environmental protection, for dust control and, for noise control. Indicate proposed locations and construction of barriers.

C. Schedule of Selective Demolition Activities: Indicate the following:
   1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
   2. Interruption of utility services. Indicate how long utility services will be interrupted.
   3. Coordination for shutoff, capping, and continuation of utility services.
   4. Use of elevator and stairs.
   5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

D. Inventory: Submit a list of items to be removed, salvaged and delivered to Owner prior to start of demolition.

E. Photographs or Video: Submit before Work begins.

F. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

G. Warranties: Documentation indicated that existing warranties are still in effect after completion of selective demolition.

1.07 CLOSEOUT SUBMITTALS

A. Inventory: Submit a list of items that have been removed and salvaged.

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

1.08 QUALITY ASSURANCE

A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

1.09 FIELD CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: Hazardous materials are present in buildings and structures to be selectively demolished. A report on the presence of hazardous materials is on file for review and use and is included in this Division of the specifications. Examine report and / or the appropriate specification section to become aware of locations where hazardous materials are present.
1. Hazardous material remediation is specified elsewhere in the Contract Documents.
2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.
3. Owner will provide material safety data sheets for suspected hazardous materials that are known to be present in buildings and structures to be selectively demolished because of building operations or processes performed there.

E. Storage or sale of removed items or materials on-site is not permitted.

F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
1. Maintain fire-protection facilities in service during selective demolition operations.
2. Provide a Fire Watch or other method acceptable to the authority having jurisdiction should the existing fire protection facilities have to be shut down during the work.
3. Do not disable or disrupt building fire or life safety systems without five (5) days prior written notice to Architect.

1.10 WARRANTY

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

B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.

C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

E. Engage a professional engineer to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
   1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

F. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.
   1. Inventory and record the condition of items to be removed and salvaged. Provide photographs of conditions that might be misconstrued as damage caused by salvage operations.
   2. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.02 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
   1. Comply with requirements for existing services/systems interruptions specified in Section 011200 "Contract Summary of Work".

B. Existing Services/Systems to be removed, relocated, or abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
   1. Arrange to shut off indicated utilities with utility companies. Provide 5 days notice to the Architect prior to any utility shut-downs.
   2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
   3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.
      a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap, plug or reconnect remaining piping with same or compatible piping material.
      b. Equipment to Be Removed: Disconnect and cap services and remove equipment.
      c. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug or reconnect remaining ducts with same or compatible ductwork material.

C. Refrigerant: Remove refrigerant from mechanical equipment to be selectively demolished according to 40 CFR 82 and regulations of authorities having jurisdiction.
NY Rising – Governor’s Office of Storm Recovery  
GOSR Work Order Number: NTF-1-DES  
Edgewater Park Volunteer Fire Department — Storm Hardening and Abatement

SECTION 024119 – SELECTIVE DEMOLITION

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. Comply with requirements for access and protection specified in Section 015000 “Temporary Facilities and Controls.”

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
   1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building. Maintain existing required widths of egress pathways throughout.
   2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
   3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
   4. Cover and protect furniture, furnishings, and equipment that have not been removed.
   5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."

C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
   1. Strengthen or add new supports when required during progress of selective demolition.

3.04 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
   1. 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. 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.
   5. Maintain adequate ventilation when using cutting torches.
   6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
SECTION 024119 – SELECTIVE DEMOLITION

7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
9. Dispose of demolished items and materials promptly.

B. Removed and Salvaged Items:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until delivery to Owner.
   4. Transport items to Owner's storage area designated by Owner or as indicated on Drawings.
   5. Protect items from damage during transport and storage.

C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.05 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 1 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.

B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.

C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.

D. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.

3.06 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstallated, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
   1. Do not allow demolished materials to accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
   3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.
SECTION 024119 – SELECTIVE DEMOLITION

3.07 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.08 SELECTIVE DEMOLITION SCHEDULE

A. Remove, store, relocate, salvage and protect the following materials and equipment:
   1. Existing Items to Be Removed: Items indicated on contract drawings and items listed in technical specifications sections.
   2. Existing Items to Be Removed, relocated and/or Salvaged: Items required to be removed, relocated salvaged and/or stored to complete the work as indicated or called for in these construction documents.

B. Existing Items to Remain: to complete and conform to the work of the project shall be as indicated on the contract drawings and items listed in the technical specification sections.

END OF SECTION 024119
1.0 GENERAL REQUIREMENTS

1.1 Scope of Work

a. The Contractor shall furnish all labor, materials, tools, equipment, plans and permit applications, and perform all operations necessary for excavation, removal, staging, stockpiling, handling, hoisting, loading, transportation, unloading and disposal of contaminated soil. Provide all notices, permits, reports, and comply with all applicable Federal, State, and local laws and regulations applicable to the work.

b. All soil to be removed from the site must be removed as contaminated soil. The Contractor shall be responsible for ensuring that any soil to be removed is disposed of in accordance with all applicable regulations for such contaminated soil waste.

c. The work shall include, but not be limited to the removal of the following:

<table>
<thead>
<tr>
<th>Site</th>
<th>Material Description</th>
<th>Estimated Quantity</th>
<th>Contaminants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edgewater Park Volunteer Fire Department — edgewater Park, NY</td>
<td>Contaminated Soil</td>
<td>10 Cu Yds</td>
<td>Chromium; Lead; Total Mercury; Zync; 4,4'-DDE; 4,4'-DDT; Aldrin; Alpha Chlordane; Benzo(a)Anthracene; Benzo(a)Pyrene; Benzo(a)Fluoranthene; Chrysene; Indeno(1,2,3-cd)Pyrene</td>
</tr>
</tbody>
</table>

d. All in-situ contaminated soil (including intermingled rock, brick, and other fill materials) removed from the site shall be removed and disposed of in accordance with this specification.

e. Contaminated soil is defined as soil exhibiting one or more of the following characteristics:
   1. Elevated volatile organic compounds confirmed by lab analysis
   2. Contain constituents at levels above applicable regulatory standards.

f. Hazardous soil is defined as soil exhibiting any of the characteristics of a hazardous waste, namely ignitability, corrosivity, reactivity, and toxicity as defined in 6 NYCRR part 371 and 40 CFR part 261. The soil as characterized for waste in this contract has been determined to be non-hazardous.

1.2 Codes, Standards, and Specifications

a. All operations necessary for removal and disposal of contaminated soil shall comply with the applicable Federal, State, and local laws and regulations, and Authority policies. Federal, State, and local laws and regulations, and Authority policies referenced in this Specification shall be the latest edition in effect at the time the Work is being performed unless otherwise noted.

b. The Contractor shall be responsible for the safe and proper management of all wastes addressed herein in accordance with all Local, State, and Federal regulatory requirements, including, but not limited to the following:
SECTION 028100 - SOIL DISPOSAL

- 6NYCRR 360 - Solid Waste Management Facilities
- 6NYCRR 364 — Waste Transporter Permits
- 6NYCRR 375 — Environmental Remediation Programs
- 6NYCRR 376 — Land Disposal Restrictions
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) 42 U.S.C. s/s 9601 et seq.
- Toxic Substances Control Act (TSCA) 15 U.S.C. sis 2601 et seq.
- 29 CFR 273 — Standards for Universal Waste Management
- 29 CFR 1926 - Safety and Health Regulations for Construction
- CP-51 Soil Cleanup Guidance, October 21, 2010
- OSHA 29 CFR 1926 Respiratory Protection

1.3 Noted Restrictions

a. Verify that analytical test results of materials are consistent with applicable regulatory standards and permit restrictions.

b. No discharge is to be conveyed directly or indirectly to any sewer system inlet without the authorization of the resident engineer and submission of all necessary federal, state, and local permits.

1.4 Quality Control

a. Verify that sampling activities of materials are performed in accordance with applicable regulatory protocols and referenced standards and regulations referenced herein above.

b. Ensure that all employees handling contaminated materials, including subcontractors, are qualified and experienced in the work of sampling, preparing, removing, handling, and disposing of the contaminated waste materials to be performed under this Contract.

c. A Health and Safety Officer (HSO) shall be present at the Project site at all times.

2.0 PRODUCTS

2.1 Surveys, Plans, Data, Etc

Provide the following documentation: Plans, field data, calibration data, truck manifests, Treatment, Storage, and Disposal Facility (TSDF) receipts, laboratory data, and amount of contaminated soil removed from site in cubic yards.
SECTION 028100 - SOIL DISPOSAL

3.0 EXECUTION

3.1 Protection of Existing Structures

Existing structures and facilities within the area of operations shall be protected. Any disturbance or damage to the Work, the existing structures, or any impairment of facilities resulting directly or indirectly from the Contractor's operations, shall be properly restored, repaired, or replaced at no additional cost to the Contracting Party or the Authority.

3.2 Work Plan Preparation, Acceptance and Implementation

a. The Contractor shall develop and submit a Work Plan for the Engineer's acceptance within 30 days after award. The Plan shall include an:
   1. Health and Safety Plan;
   2. Emergency Action Plan;
   3. Waste Management Plan for Investigative Derived Waste (IDW);
   4. Waste Transporter permits
   5. Landfill permits
   6. Letter of acceptance for the waste from the landfill
   7. Original, fully executed, Waste Disposal Manifests, bills of lading, etc.

The Plan shall be developed consistent with:
   • 6 NYCRR Parts 360, 370 and 364;
   • CP-51 Soil Cleanup Guidance, October 21, 2010
   • 29 CFR 1910.120 OSHA requirements for Worker Protection.

b. All waste shall be stored, transported, and disposed of consistent with applicable Federal, State, local and Authority policy requirements.

C. A New York State ELAP approved laboratory shall issue all laboratory sample results.

d. The Contractor shall secure all necessary permits for this work as appropriate before the commencement of work.

e. The Plan shall include the laboratory results of the soil investigation prepared by the Engineer and included with the project Bid Documents for characterization of the soil to be removed.

f. The Waste Management Plan shall include a written description of planned removal and disposal activities (including transporters, TSDF facility, and a copy of their Operating Permit). A beneficial use plan prepared pursuant to 6 NYCRR 360-1.15 shall also be included.
g. Upon acceptance by the Authority, the Contractor shall implement the Plan. The Contractor shall provide all Plan data to the Engineer on a 24-hour turnaround basis.

h. The Contractor shall maintain all field data, laboratory results, and final disposition records for three years after Substantial Completion of the Project.

3.3 Procedure

a. Provide temporary barricades and protection where required to prevent damage to existing facilities or new work and to prevent injury to Contractor's and Authority employees.

b. Except as otherwise set forth in these Specifications or as directed by the Engineer, all removed materials shall become the property of the Contractor and shall promptly be removed from the Work Site and managed in accordance with this specification.

b. If at any time during the course of construction, the Contractor, by field-testing or laboratory analysis, determines any soil to be contaminated, other than what has been identified through the accepted Plan, the Engineer shall immediately be notified. The Authority will take the appropriate action to characterize the soil as contaminated or hazardous waste. Upon determination by the Authority of the character of the soil, the Engineer will authorize the Contractor to dispose of the soil, in a manner acceptable to the Authority and in accordance with all Federal, State, and local regulatory requirements for such material.

3.4 Disposal of Contaminated Waste

a. All excavated materials characterized by the Contractor as contaminated soil, as defined in paragraph 1.1 c, shall be disposed of, or beneficially reused consistent with 6NYCRR Part 360 and Authority requirements. The Contractor shall dispose of all petroleum/gasoline contaminated soil to an asphalt manufacturing facility, processing facility or landfill, which is permitted by the New York State Department of Environmental Conservation (NYSDEC) to accept such materials. The safe and proper removal of all contaminated material and the disposal of such waste off the site in accordance with all local, State, and federal regulatory requirements shall be the responsibility of the Contractor. All required documents in connection with the disposal of such shall be provided to the Engineer.

b. All fees, transportation costs, and special precautions are the responsibility of the Contractor. Any violations of applicable laws and regulations and the defense against such violations shall be solely the responsibility of the Contractor who shall be solely liable for any fines or assessments levied against the Project due to improper handling or disposal of the waste material.
PART 1 GENERAL

1.01 SCOPE OF WORK

A. This asbestos abatement project will consist of the removal and disposal of asbestos containing materials (ACM) at Edgewater Park Volunteer Fire Department. This facility is located at 1 Adee Drive, Edgewater Park, NY 10465. This work is in relation to the Storm Hardening project, GOSR Work Order Number: NTF-1-DES.

B. The work shall include but not be limited to the removal of the following:

<table>
<thead>
<tr>
<th>Work Area</th>
<th>Location</th>
<th>Material Description</th>
<th>Quantity</th>
<th>Title 15 Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1st Floor Main Meeting Room Closet</td>
<td>9” x 9” Floor Tile and Associated Mastics</td>
<td>8.0 SF</td>
<td>§1-108</td>
</tr>
<tr>
<td>2</td>
<td>2nd Floor Kitchen</td>
<td>Under-Sink and Counter Coating (black)</td>
<td>20.0 SF</td>
<td>§1-81</td>
</tr>
<tr>
<td>3A and 3B</td>
<td>2nd Floor EPOC Room</td>
<td>“Popcorn” Wall Plaster</td>
<td>592.0 SF</td>
<td>§1-81</td>
</tr>
<tr>
<td>4</td>
<td>2nd Floor Kitchen Roof</td>
<td>Built-Up Roofing Material LAH Layers</td>
<td>570.0 SF</td>
<td>§1-107</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Parapet Wall Material</td>
<td>38.0 SF</td>
<td>§1-109</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wall Material</td>
<td>44.0 SF</td>
<td>§1-109</td>
</tr>
<tr>
<td>5</td>
<td>West Building (Tower) — 3rd Floor</td>
<td>Wood Door Insulation</td>
<td>21.0 SF</td>
<td>§1-81</td>
</tr>
</tbody>
</table>

C. The Contractor shall be aware of all conditions of the Project and is responsible for verifying quantities and locations of all Work to be performed. Failure to do so shall not relieve the Contractor of its obligation to furnish all labor and materials necessary to perform the Work.

D. All Work shall be performed in strict accordance with the Project Documents and all governing codes, rules, and regulations. Where conflicts occur between the Project Documents and applicable codes, rules, and regulations, the more stringent shall apply.

E. Working hours shall be as required and approved by the Owner. Asbestos abatement activities including, but not limited to, work area preparation, gross removal activities, cleaning activities, waste removal, etc. may need to be performed during ‘off-hours’ (including nights and weekends). In addition, multiple mobilizations may be required to perform the work identified in this project. The Contractor shall coordinate and schedule all Work with the facility and Owner’s representative.

1.02 SPECIAL JOB CONDITIONS

A. Any special job conditions, including Variances obtained by the Owner, are described below.

1. ACM abatement work shall be required to be coordinated with lead-based paint abatement activities to protect against possible ACM impact during lead-based paint removals.

2. All work shall be performed in strict accordance with the project documents and Title 15, Chapter 1 of the Rules of the City of New York;
SECTION 028200 - ASBESTOS REMOVAL

3. The Abatement Contractor shall coordinate locations of decontamination unit, egress routes, and waste container placement with the Owner.

4. The Abatement Contractor is responsible for filing all notifications as requested by the owner with regulatory agencies necessary to conduct this work, which may include ACP-7 and ACP-9 forms.

5. Abatement Contractor may be required to provide temporary electric and water sources for the abatement work. Locations for temporary water and electric are for the Abatement Contractor to define as part of their project specific Work Plan. Locations, if any, in abatement design drawings are recommendations only.

6. All targeted ACM shall be removed completely down to the substrate surface and be made suitable for other non-abatement trade activities in the area.

7. Accessing the roof level may require the use of man lifts or scaffolding. Access for the roof work area must be part of the Abatement Contractors work plan and approved by the Owner or Owner's representative.

8. Abatement Contractor shall be aware that abatement in Work Area 4 may impose certain obligations on their part in terms of supplying and coordinating adequate fall protection/fall arrest systems for any abatement workers in this area.

9. Abatement Contractor shall be responsible for temporary bridging as detailed on drawing H-104.00 to allow for 2” floor exit doors to remain open and operable during abatement activities in Work Area 4.

10. Abatement Contractor shall be responsible for removing a 1-foot strip of the 9”x9” floor tiles in the Main Meeting Room Closet to allow for safe removal of the closet wall.

11. Abatement Contractor shall be required to maintain a three (3) foot egress pathway through the 2nd Floor Kitchen during abatement activities in Work Area 2.

12. Abatement procedures in Work Areas 3A and 3B shall require the Abatement Contractor to coordinate with the General Contractor for removal of partitions to maintain adequate egress pathways for abatement workers. See drawings H-102 and H-103.

1.03 PERMITS AND COMPLIANCE

A. The Contractor shall assume full responsibility and liability for compliance with all applicable Federal, State, and local laws, rules, and regulations pertaining to Work practices, protection of Workers, authorized visitors to the site, persons, and property adjacent to the Work.

B. Perform asbestos related Work in accordance with New York State Industrial Code Rule 56 (herein referred to as Code Rule 56), New York City Department of Environmental Protection Asbestos Control Program Title 15, Chapter I of the Rules of New York City (herein referred to as NYC DEP regulations), 40 CFR 61, and 29 CFR 1926. Where more stringent requirements are specified, adhere to the more stringent requirements.

C. The Contractor is responsible for providing the Asbestos Inspection Report (ACP7) filing to NYC DEP as well as all Asbestos Abatement Permit applications with supporting documentation, including the Work Place Safety Plan and any other applicable documents as may be required by NYC DEP. Any Asbestos Abatement Permit supporting documentation previously submitted and/or reviewed by NYC DEP are included as an appendix of this specification.

D. The Contractor is responsible for obtaining any Asbestos Project Conditional Completion (ACP20) forms upon completion of each phase of asbestos abatement or as otherwise may be required during the course of the project as well as the Asbestos Project Completion (ACP21)
SECTION 028200 - ASBESTOS REMOVAL

form. The Contractor shall be responsible to submit the A-TRI form to NYC DEP and any other applicable documents as may be required by NYC DEP.

E. The Contractor must maintain current licenses pursuant to New York State Department of Labor, New York City Department of Environmental Protection Asbestos Control Program, New York City Department of Sanitation, and New York State Department of Environmental Conservation for all Work related to this Project, including the removal, handling, transport, and disposal of asbestos containing materials.

F. The Contractor must have and submit proof upon request that any persons employed by the Contractor to engage in or supervise Work on any asbestos Project have valid NYS and NYC asbestos handling and supervisor certificates pursuant to Code Rule 56 and NYC DEP regulations.

G. The Contractor shall comply fully with any Variance secured from regulatory agencies by the Owner in the performance of the Work. Any Variance applications previously submitted are included as an appendix of this specification.

H. The Contractor shall be responsible for obtaining all Variances as may be required for the Project or as requested by the Owner, including variances necessary to obtain NYC Department of Buildings Work Permits prior to completion of all asbestos abatement activities. Approval of the Owner is required prior to submission of a Variance application to any regulatory agency.

I. Failure to adhere to the Project Documents shall constitute a breach of the Contract and the Owner shall have the right to and may terminate the Contract provided, however, the failure of the Owner to so terminate shall not relieve the Contractor from future compliance.

1.04 SUBMITTALS

A. Pre-Work Submittals: Within 7 days prior to the pre-construction conference, the Contractor shall submit 3 copies of the documents listed below, with 1 copy transmitted to the GOSR Code Compliance Unit for review and approval prior to the commencement of asbestos abatement activities:

1. Contractor license issued by New York State Department of Labor.
2. A list of Projects performed within the past two (2) years and include the dollar value of all Projects. Provide Project references to include Owner, consultant, and air monitoring firm's name, contact persons, address, and phone number.
3. Progress Schedule:
   a. Show the complete sequence of abatement activities and the sequencing of Work within each building or building section.
   b. Show the dates for the beginning and completion of each major element of Work including substantial completion dates for each Work Area, building, or phase.
4. Project Notifications: As required by Federal, State, and NYC DEP regulatory agencies together with proof of transmittal (i.e. certified mail return receipt).
5. Building Occupant Notification: As required by regulatory agencies.
6. Abatement Work Plan: Provide plans that clearly indicate the following:
   a. All Work Areas/containments numbered sequentially.
   b. Locations and types of all decontamination enclosures.
   c. Entrances and exits to the Work Areas/containments.
   d. Type of abatement activity/technique for each Work Area/containment.

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SECTION 028200 - ASBESTOS REMOVAL

e. Number and location of negative air units and exhaust. Also, provide calculations for determining number of negative air pressure units.

f. Proposed location and construction of storage facilities and field office.

g. Location of water and electrical connections to building services.

h. Waste transport routes through the building to the waste storage container.

7. Disposal Site/Landfill Permit from applicable regulatory agency.

8. NYS Department of Environmental Conservation Waste Transporter Permit.


B. On-Site Submittals: Refer to Part 3.01.C for all submittals, documentation, and postings required to be maintained on-site during abatement activities.

C. Project Close-out Submittals: Within 30 days of the completion of each abatement phase, the Contractor shall submit 4 copies of the documents listed below. One set of the documents shall be transmitted to the Facility and one set to the GOSR Code Compliance Unit for review and approval prior to the Contractor's final payment.

1. Originals of all waste disposal manifests, seals, and disposal logs.

2. OSHA compliance air monitoring records conducted during the Work.

3. Daily progress log, including the entry/exit log.

4. A list of all Workers used in the performance of the Project, including name, social security number, NYS DOL and NYC DEP certification numbers and type of certification (i.e. supervisor, asbestos handler, etc.).

5. For each Worker used in the performance of the Project, submit the Worker's Acknowledgment Statement.

6. Disposal Site/Landfill Permit from applicable regulatory agency.


1.05 PRE-CONSTRUCTION CONFERENCE

A. Prior to start of preparatory Work under this Contract, the Contractor shall attend a pre-construction conference attended by Owner, Facility Personnel, and Environmental Consultant.

B. Agenda for this conference shall include but not necessarily be limited to:

1. Contractor's scope of Work, Work plan, and schedule to include number of workers and shifts.

2. Contractor's safety and health precautions including protective clothing and equipment and decontamination procedures.

3. Environmental Consultant's duties, functions, and authority.

4. Contractor's Work procedures including:


   b. Respiratory protection.

   c. Disposal procedures.

   d. Cleanup procedures.

   e. Fire exits and emergency procedures.

5. Contractor's required pre-work and on-site submittals, documentation, and postings.

6. Contractor's plan for twenty-four (24) hour Project security both for prevention of theft and for barring entry of unauthorized personnel into Work Areas.

7. Temporary utilities.

8. Handling of furniture and other moveable objects.

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SECTION 028200 - ASBESTOS REMOVAL

10. Waste disposal requirements and procedures, including use of the Owner supplied waste manifest and container seals.

C. In conjunction with the conference the Contractor shall accompany the Owner and Environmental Consultant on a pre-construction walk-through documenting existing condition of finishes and furnishings, reviewing overall Work plan, location of fire exits, fire protection equipment, water supply and temporary electric tie-in.

1.06 APPLICABLE STANDARDS AND REGULATIONS

A. The Contractor shall comply with the following codes and standards, except where more stringent requirements are shown or specified:

B. Federal Regulations:
1. 29 CFR 1910.1001, "Asbestos" (OSHA)
2. 29 CFR 1910.1200, "Hazard Communication" (OSHA)
3. 29 CFR 1910.134, "Respiratory Protection" (OSHA)
4. 29 CFR 1910.145, "Specification for Accident Prevention Signs and Tags" (OSHA)
5. 29 CFR 1926, "Construction Industry" (OSHA)
6. 29 CFR 1926.1101, "Asbestos, Tremolite, Anthophyllite, and Actinolite" (OSHA)
7. 29 CFR 1926.500 "Guardrails, Handrails and Covers" (OSHA)
8. 40 CFR 61, Subpart A, "General Provisions" (EPA)
9. 40 CFR 61, Subpart M, "National Emission Standard for Asbestos" (EPA)
10. 49 CFR 171-172, Transportation Standards (DOT)

C. New York State Regulations:
2. 6 NYCRR, Parts 360, 364, Disposal and Transportation (DEC)
3. 10 NYCRR, Part 73, "Asbestos Safety Program Requirements" (DOH)

D. Local Regulations:
1. New York City Department of Environmental Protection Asbestos Control Program Title 15, Chapter 1 of the Rules of New York City
2. New York City Department of Sanitation Title 16, Chapter 8 of the Rules of New York City

E. Standards and Guidance Documents:
2. ANSI Z9.2-79, Fundamentals Governing the Design and Operation of Local Exhaust Systems
3. EPA 560/585-024, Guidance for Controlling Asbestos-Containing Materials in Buildings (Purple Book)
4. EPA 530-SW-85-007, Asbestos Waste Management Guidance

1.07 NOTICES
SECTION 028200 - ASBESTOS REMOVAL

A. The Contractor shall provide notification of intent to commence asbestos abatement activities as indicated below.
   1. At least ten (10) Working days prior to beginning abatement activities, send written notification to:
      U.S. Environmental Protection Agency
      National Emissions Standards for Hazardous Air Pollutants (NESHAPS) Coordinator
      26 Federal Plaza
      New York, NY 10007
   2. At least ten (10) days prior to beginning abatement activities send written notification to:
      New York State Department of Labor
      Division of Safety and Health, Asbestos Control Program
      State Office Campus
      Building 12 - Room 454
      Albany, NY 12240
   3. At least seven (7) days prior to beginning abatement activities provide an electronic Asbestos Project Notification (ACP7) to New York City Department of Environmental Protection Asbestos Control Program in accordance with NYC DEP regulations.

B. The Contractor is required to send notifications to U.S. Environmental Protection Agency and New York State Department of Labor via mail or package delivery service that will provide proof of delivery and receipt.

C. The Contractor shall be responsible for maintaining current project filings with regulatory agencies for the duration of the project.

D. The Contractor Shall post and/or provide Building Occupant Notification at least 10 days prior to beginning abatement activities as required by Code Rule 56.

E. The Contractor shall post the Asbestos Abatement Notice prior to beginning abatement activities as required by NYC DEP regulations. Also, post a floor plan as required by NYC DEP regulations.

1.08 PROJECT MONITORING AND AIR SAMPLING

A. The Owner shall engage the services of an Environmental Consultant (the Consultant) who shall serve as the Owner's Representative in regard to the performance of the asbestos abatement Project and provide direction as required throughout the entire abatement Project period.

B. The Contractor is required to ensure cooperation of its personnel with the Consultant for the air sampling and Project monitoring functions described in this section. The Contractor shall comply with all direction given by the Consultant during the course of the Project.

C. The Consultant shall provide the following administrative services:
   1. Review and approve or disapprove all submittals, shop drawings, schedules, and samples.
   2. Assure that all notifications to governmental agencies by the Contractor are submitted in a timely manner and are correct in content.

D. The Consultant shall staff the Project with a trained and certified person(s) to act on the Owner's behalf at the job site. This individual shall be designated as the Abatement Project Monitor (APM).
1. The APM shall be on-site at all times the Contractor is on-site. The Contractor shall not be permitted to conduct any Work unless the APM is on-site (except for inspection of barriers and negative air system during non-working days).

2. The APM shall have the authority to direct the actions of the Contractor verbally and in writing to ensure compliance with the Project documents and all regulations. The APM shall have the authority to Stop Work when gross Work practice deficiencies or unsafe practices are observed, or when ambient fiber concentrations outside the removal area exceed 0.01 f/cc or background level.
   a. Such Stop Work order shall be effective immediately and remain in effect until corrective measures have been taken and the situation has been corrected.
   b. Standby time required to resolve the situation shall be at the Contractor's expense.

3. The APM shall provide the following services:
   a. Inspection of the Contractor's Work, practices, and procedures, including temporary protection requirements, for compliance with all regulations and Project specifications including provisions required by Variances, the Work Place Safety Plan and Asbestos Work Permit.
   b. Provide abatement Project air sampling as required by applicable regulations and the Owner. Sampling will include background, work area preparation, asbestos handling, and final cleaning and clearance air sampling.
   c. Verify daily that all Workers used in the performance of the Project are certified by the appropriate regulatory agency.
   d. Monitor the progress of the Contractor's Work, and report any deviations from the schedule to the Owner.
   e. Monitor, verify, and document all waste load-out operations.
   f. Verify that the Contractor is performing personal air monitoring daily, and that results are being returned and posted at the site as required.
   g. The APM shall maintain a log on site that documents all project related and Consultant and Contractor actions, activities, and occurrences.

4. The following minimum inspections shall be conducted by the APM. Additional inspections shall be conducted as required by Project conditions. Progression from one phase of Work to the next by the Contractor is only permitted with the written approval of the APM.
   a. Pre-Construction Inspection: The purpose of this inspection is to verify the existing conditions of the Work Areas and to document these conditions.
   b. Pre-Commencement Inspection: The purpose of this inspection is to verify the integrity of each containment system prior to disturbance of any asbestos containing material. This inspection shall take place only after the Work Area is fully prepped for removal.
   c. Work Inspections: The purpose of this inspection is to monitor the Work practices and procedures employed on the Project and to monitor the continued integrity of the containment system. Inspections within the removal areas shall be conducted by the APM during all preparation, removal, and cleaning activities at least twice every Work shift. Additional inspections shall be conducted as warranted.
   d. Pre-Encapsulation Inspection: The purpose of this inspection is to ensure the complete removal of Asbestos Containing Material (ACM), from all surfaces in the Work Area prior to encapsulation.
   e. Visual Clearance Inspection: The purpose of this inspection is to verify that: all materials in the scope of work have been properly removed; no visible asbestos debris/residue remains; no pools of liquid or condensation remains; and all required
cleanings are complete. This inspection shall be conducted before final air clearance testing.

f. Post-Clearance Inspection: The purpose of this inspection is to ensure the complete removal of ACM, including debris, from the Work Area after satisfactory final clearance sampling and removal of all isolation and critical barriers and equipment from the Work Area.

g. Punch List Inspection: The purpose of this inspection is to verify the Contractor's certification that all Work has been completed as contracted and the existing condition of the area prior to its release to the Owner.

E. The Consultant shall provide abatement Project air sampling and analysis as required by applicable regulations. Sampling will include background, work area preparation, asbestos handling, and final cleaning and clearance air sampling.

1. Unless otherwise required by applicable regulations, the Consultant shall have samples analyzed by Phase Contrast Microscopy (PCM). Results shall be available at the Project site within 24 hours of completion of sampling.

2. Samples shall be collected as required by applicable regulations and these specifications. If PCM air sample analysis results exceed the satisfactory clearance criteria, then TEM analysis of the entire set of clearance air samples may be used, provided that a standard NIOSH/ELAP accepted laboratory analysis method is utilized that shall report each air sample result in fibers per cubic centimeter.

3. If the air sampling during any phase of the abatement project reveals airborne fiber levels at or above .01 fibers/cc or the established background level, whichever is greater, outside the regulated Work Area, Work shall stop immediately and corrective measures required by applicable regulations shall be initiated. Notify all employers and occupants in adjacent areas. The Contractor shall bear the burden of any and all costs incurred by this delay.

4. At the completion of each abatement phase, the Environmental Consultant shall provide the ACP15 Project Monitors Report to DEP.

1.09 CONTRACTOR AIR SAMPLING

A. In addition to the requirements of OSHA 1926.1101, the Contractor shall be required to perform personal air monitoring every Work shift in each Work Area during which abatement activities occur in order to determine that appropriate respiratory protection is being worn and utilized.

B. The Contractor shall conduct air sampling that is representative of both the 8-hour time weighted average and 30-minute short-term exposures to indicate compliance with the permissible exposure and excursion limits.

C. The Contractor's laboratory analysis of air samples shall be conducted by an NYS DOH ELAP approved laboratory.

D. Results of personnel air sample analyses shall be available, verbally, within twenty-four (24) hours of sampling and shall be posted upon receipt. Written laboratory reports shall be delivered and posted at the Work site within five (5) days. Failure to comply with these requirements may result in all work being stopped until compliance is achieved.

1.10 PROJECT SUPERVISOR

A. The Contractor shall designate a full-time Project Supervisor who shall meet the following qualifications:
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1. The Project Supervisor shall hold New York State DOL and New York City DEP certification as an Asbestos Supervisor.
2. The Project Supervisor shall meet the requirements of a "Competent Person" as defined by OSHA 1926.1101 and shall have a minimum of one year experience as a supervisor.
3. The Project Supervisor must be able to speak, read, and write English fluently, as well as communicate in the primary language of the Workers.

B. If the Project Supervisor is not on-site at any time whatsoever, all Work shall be stopped. The Project Supervisor shall remain on-site until the Project is complete. The Project Supervisor cannot be removed from the Project without the written consent of the Owner and the Environmental Consultant. The Project Supervisor shall be removed from the Project if so requested by the Owner.

C. The Project Supervisor shall maintain the bound Daily Project Log that also includes the entry/exit logs as required by applicable regulations and section 2.03 of the specifications and the Waste Disposal Log required by section 4.04 of the specifications.

D. The Project Supervisor shall be responsible for the performance of the Work and shall represent the Contractor in all respects at the Project site. The Supervisor shall be the primary point of contact for the Asbestos Project Monitor.

1.11 MEDICAL REQUIREMENTS
A. Before exposure to airborne asbestos fibers, provide Workers with a comprehensive medical examination as required by 29 CFR 1910.1001, and 29 CFR 1926.1101.
   1. This examination is not required if adequate records show the employee has been examined as required by 29 CFR 1910.1001, and 29 CFR 1926.1101 within the past year.
   2. The same medical examination shall be given on an annual basis to employees engaged in an occupation involving asbestos fibers and within thirty (30) calendar days before or after the termination of employment in such occupations.

1.12 TRAINING
A. As required by applicable regulations, prior to assignment to asbestos Work instruct each employee with regard to the hazards of asbestos, safety and health precautions, and the use and requirements of protective clothing and equipment.


1.13 RESPIRATORY PROTECTION
A. Select respirators from those approved by the Mine Safety and Health Administration (MSHA), and the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services.

B. Respirators shall be individually fit-tested to personnel under the direction of an Industrial Hygienist on a yearly basis. Fit-tested respirators shall be permanently marked to identify the individual fitted, and use shall be limited to that individual. Fit-test records shall be maintained on site for each employee.
C. Where fiber levels permit, and in compliance with regulatory requirements, Powered Air Purifying Respirators (PAPR) are the minimum allowable respiratory protection permitted to be utilized during gross removal operations of OSHA Class I or OSHA Class II friable ACM.

D. No respirators shall be issued to personnel without such personnel participating in a respirator training program.

E. High Efficiency Particulate Air (HEPA) respirator filters shall be approved by NIOSH and shall conform to the OSHA requirements in 29 CFR 1910.134 and 29 CFR 1926.1101.

F. A storage area for respirators shall be provided by the Contractor in the clean room side of the personnel decontamination enclosure where they will be kept in a clean environment.

G. The Contractor shall provide and make available a sufficient quantity of respirator filters so that filter changes can be made as necessary during the work day. Filters will be removed and discarded during the decontamination process. Filters cannot be reused. Filters must be changed if breathing becomes difficult.

H. Filters used with negative pressure air purifying respirators shall not be used any longer than one eight (8) hour work day.

I. Any authorized visitor, Worker, or supervisor found in the Work Area not wearing the required respiratory protection shall be removed from the Project site and not be permitted to return.

J. The Contractor shall have at least two (2) Powered Air Purifying Respirators stored on site designed for authorized visitors use. Appropriate respirator filters for authorized visitors shall be made available by the Contractor.

1.14 DELIVERY AND STORAGE
A. Deliver all materials to the job site in original packages with containers bearing manufacturer's name and label.

B. Store all materials at the job site in a suitable and designated area.
   1. Store materials subject to deterioration or damage away from wet or damp surfaces and under cover.
   2. Protect materials from unintended contamination and theft.
   3. Storage areas shall be kept clean and organized.

C. Remove damaged or deteriorated materials from the job site. Materials contaminated with asbestos shall be disposed of as asbestos debris as herein specified.

1.15 TEMPORARY UTILITIES
A. Shut down and lock out all electrical power to the asbestos Work Areas.

B. Provide temporary 120-240 volt, single phase, three wire, 100 amp electric service with Ground Fault Circuit Interrupters (GFCI) for all electric requirements within the asbestos Work Area.
   1. Where available, obtain from Owner's existing system. Otherwise provide power from other sources (i.e. generator).
   2. Provide temporary wiring and "weatherproof' receptacles in sufficient quantity and location to serve all HEPA equipment and tools.
SECTION 028200 - ASBESTOS REMOVAL

3. Provide wiring and receptacles as required by the Environmental Consultant for air sampling equipment.

4. All power to the Work Area shall be brought in from outside the area through GFCI's at the source.

C. Provide temporary lighting with "weatherproof" fixtures for all Work Areas including decontamination chambers.
   1. The entire Work Area shall be kept illuminated at all times.
   2. Provide lighting as required by the Environmental Consultant for the purposes of performing required inspections.

D. All temporary devices and wiring used in the Work Area shall be capable of decontamination procedures including HEPA vacuuming and wet-wiping.

E. Utilize domestic water service, if available, from Owner's existing system. Provide hot water heaters with sufficient capacity to meet Project demands.

PART 2 PRODUCTS

2.01 PROTECTIVE CLOTHING
A. Provide personnel utilized during the Project with disposable protective whole body clothing, head coverings, gloves and foot coverings. Provide disposable plastic or rubber gloves to protect hands. Cloth gloves may be worn inside the plastic or rubber for comfort, but shall not be used alone. Make sleeves secure at the wrists and make foot coverings secure at the ankles by the use of tape, or provide disposable coverings with elastic wrists or tops.

B. Provide sufficient quantities of protective clothing to assure a minimum of four (4) complete disposable outfits per day for each individual performing abatement Work.

C. Eye protection and hard hats shall be provided and made available for all personnel entering any Work Area.

D. Authorized visitors shall be provided with suitable protective clothing, headgear, eye protection, and footwear whenever they enter the Work Area.

2.02 SIGNS AND LABELS
A. Provide bilingual (English-Spanish) warning signs and barrier tapes at all approaches to asbestos Work Areas. Locate signs at such distance that personnel may read the sign and take the necessary protective steps required before entering the area.

1. Provide danger signs in vertical format conforming to 29 CFR 1926.1101, minimum 20" x 14" displaying the following legend:

   DANGER
   ASBESTOS CANCER AND LUNG DISEASE
   HAZARD
   AUTHORIZED PERSONNEL ONLY
   RESPIRATORS AND PROTECTIVE CLOTHING
   ARE REQUIRED IN THIS AREA
SECTION 028200 - ASBESTOS REMOVAL

2. Provide 3” wide yellow barrier tape printed with black lettered, "DANGER ASBESTOS REMOVAL". Locate barrier tape across all corridors, entrances and access routes to asbestos Work Area. Install tape 3’ to 4’ AFF.

B. Provide asbestos danger labels affixed to all asbestos materials, scrap, waste, debris and other products contaminated with asbestos.
1. Provide asbestos danger labels of sufficient size to be clearly legible, displaying the following legend:

   DANGER
   CONTAINS ASBESTOS FIBERS
   AVOID CREATING DUST
   CANCER AND LUNG DISEASE HAZARD

2. Provide the following asbestos labels, of sufficient size to be clearly legible, for display on waste containers (bags or drums) which will be used to transport asbestos contaminated material in accordance with United States Department of Transportation 49 CFR Parts 171 and 172: (Note: Include “RQ” for friable asbestos waste only.)

   RQ, (WASTE) ASBESTOS, 9, NA2212, PGIII

3. Generator identification information shall be affixed to each waste container indicating the following printed in indelible ink:
   - Generator Name
   - Facility Name
   - Facility Address

2.03 DAILY PROJECT LOG
A. Provide a Daily Project Log. The log shall contain on title page the Project name, name, address and phone number of Owner; name, address and phone number of Environmental Consultant; name, address and phone number of Abatement Contractor; emergency numbers including, but not limited to local Fire/Rescue department and all other requirements.

B. All entries into the log shall be made in non-washable, permanent ink and such pen shall be strung to or otherwise attached to the log to prevent removal from the log-in area. Under no circumstances shall pencil entries be permitted.

C. All persons entering and exiting the Work Area shall sign the log and include name, social security number, and time.

D. The Project Supervisor shall maintain entry log records and ensure that they are recorded in accordance with the provisions of NYC DEP regulations.

2.04 SCAFFOLDING AND LADDERS
A. Provide all scaffolding and/or staging as necessary to accomplish the Work of this Contract. Scaffolding may be of suspension type or standing type such as metal tube and coupler, tubular welded frame, pole or outrigger type or cantilever type. All scaffolding shall be designed and constructed in accordance with OSHA, New York City Building Code, and any other applicable federal, state and local government regulations. Whenever there is a conflict or overlap of the above references the most stringent provisions are applicable.
SECTION 028200 - ASBESTOS REMOVAL

B. Provide scaffolding and ladders as required by the Environmental Consultant for the purposes of performing required inspections.

2.05 SURFACTANT (AMENDED WATER)
A. Wet all asbestos-containing materials prior to removal with surfactant mixed and applied in accordance with manufacturer's printed instructions.

2.06 ENCAPSULANT
A. Encapsulant shall be tinted or pigmented so that application when dry is readily discernible.
B. Only encapsulants rated as acceptable or marginally acceptable on the basis of Battelle Columbus Laboratory test procedures and rating requirements developed under the 1978 USEPA Contract shall be used for lockdown encapsulation.
C. The encapsulant solvent or vehicle shall not contain a volatile hydrocarbon.
D. Latex paint with solids content greater than 15 percent shall be considered a lockdown sealant for coating all non-metallic surfaces.

2.07 FOAM/VISCOUS LIQUID
A. Foam or viscous liquid shall be non-toxic, shall not require special respirator protection for handling, and shall not affect the handling and disposal of the asbestos waste.
B. Foam or viscous liquid shall leave an identifiable colored residue when it dissipates.

2.08 DISPOSAL BAGS, DRUMS, AND CONTAINERS
A. Provide 6 mil polyethylene disposal bags printed with asbestos caution labels. Bags shall also be imprinted with U.S. Department of Transportation required markings.
B. Provide 30 or 55 gallon capacity fiber, plastic, or metal drums capable of being sealed air and watertight if asbestos waste has the potential to damage or puncture disposal bags. Affix asbestos caution labels on lids and at one-third points around drum circumference to assure ready identification.
C. Containers and bags must be labeled in accordance with 40 CFR Part 61 NESHAPS and applicable regulations. When the bags/containers are moved to the lockable hardtop dumpster from the waste decontamination system washroom, the bags must also be appropriately labeled with the date they are moved on the bag/container in waterproof markings.
D. Labeled ACM waste containers or bags shall not be used for non-ACM waste or trash. Any material placed in labeled containers or bags, whether turned inside out or not shall be handled and disposed of as ACM waste.

2.09 HEPA VACUUM EQUIPMENT
A. All dry vacuuming performed under this contract shall be performed with High Efficiency Particulate Absolute (HEPA) filter equipped industrial vacuums conforming to ANSI Z9.2.
B. Provide tools and specialized equipment including scraping nozzles with integral vacuum hoods connected to a HEPA vacuum with flexible hose.
SECTION 028200 - ASBESTOS REMOVAL

2.10 POWER TOOLS
A. Any power tools used to drill, cut into, or otherwise disturb asbestos material shall be manufacturer equipped with HEPA filtered local exhaust ventilation.

2.11 POLYETHYLENE SHEETING
A. All polyethylene (plastic) sheeting used on the Project (including but not limited to sheeting used for critical and isolation barriers, fixed objects, walls, floors, ceilings, waste container) shall be at least 6 mil fire retardant sheeting.

B. Decontamination enclosure systems shall utilize at least 6 mil opaque fire retardant plastic sheeting. At least 2 layers of 6 mil reinforced fire retardant plastic sheeting shall be used for the flooring.

PART 3 EMCUTION

3.01 GENERAL REQUIREMENTS
A. Should visible emissions or water leaks be observed outside the Work Area, immediately stop Work and institute emergency procedures per applicable regulations. Should there be elevated fiber levels outside the Work Area, immediately stop Work and institute emergency procedures per applicable regulations. All costs incurred in decontaminating such non-Work Areas and the contents thereof shall be borne by the Contractor, at no additional cost to the Owner.

B. Medical approval, fit test reports, Worker Acknowledgments, and NYS DOL/NYC DEP certificates shall be on site prior to admittance of any Contractor's employees to the asbestos Work Area.

C. The following submittals, documentation, and postings shall be maintained on-site by the Contractor during abatement activities at a location approved by the Abatement Project Monitor:
1. Contractor license issued by New York State Department of Labor.
2. Certification, Worker Training, Medical Surveillance, Acknowledgments:
   a. NYS DOL and NYC DEP Asbestos Handler certification cards for each person employed in the removal, handling, or disturbance of asbestos.
   b. Evidence that Workers have received proper training required by the regulations and the medical examinations required by OSHA 29 CFR 1926.1101.
   c. Documentation that Workers have been fit tested specifically for respirators used on the Project.
   d. Worker's Acknowledgments: Statements signed by each employee that the employee has received training in the proper handling of asbestos containing materials; understands the health implications and risks involved; and understands the use and limitations of the respiratory equipment to be used.
3. Daily OSHA personal air monitoring results.
4. NYS Department of Health ELAP certification for the laboratory that will be analyzing the OSHA personnel air samples.
5. NYS Department of Environmental Conservation Waste Transporter Permit.
6. Project documents (specifications and drawings.)
7. Notifications, Variances, Asbestos Work Permit, Work Place Safety Plan, ACP15, ACP20/21. Ensure that the most up-to-date notifications and Variances are on-site.
8. Applicable regulations.
9. Material Safety Data Sheets of supplies/chemicals used on the Project.
10. Approved Abatement Work Plan.
SECTION 028200 - ASBESTOS REMOVAL

11. List of emergency telephone numbers.
12. Magnahelic manometer semi-annual calibration certification.

D. The following documentation shall be maintained on-site by the Abatement Project Monitor during abatement activities:
   1. Contractor license issued by New York State Department of Labor.
   2. Air Sample Log.
   3. Air sample results.
   4. ACP15 Project Monitors Reports.
   5. Project Monitor Daily Log

E. The Work Area must be vacated by building occupants prior to decontamination enclosure construction and Work Area preparation.

F. All demolition necessary to access asbestos containing materials for removal must be conducted within negative pressure enclosures by licensed asbestos handlers. Demolition debris may be disposed of as construction and demolition debris provided the Abatement Project Monitor determines that it is not contaminated with asbestos and there has been no disturbance of ACM within the enclosure. If the demolition debris is determined to be contaminated or ACM has been disturbed, it must be disposed of as asbestos waste.

3.02 PERSONNEL DECONTAMINATION ENCLOSURE

A. Provide personnel decontamination enclosure contiguous to the Work Area or as per Variance. The decontamination enclosure shall be attached to the Work Area and not located within it unless isolation barriers are installed. If the decontamination chamber is accessible to the public it shall be fully framed and sheathed to prevent unauthorized entry.

B. Access to the Work Area will be from the clean room through an air-lock to the shower and through an air lock to the equipment room. Each airlock shall be a minimum of three feet from door to door. Additional air locks shall be provided as required by applicable regulations for remote decontamination enclosures.

C. The decontamination enclosure ceiling and walls shall be covered with one layer of opaque 6 mil polyethylene sheeting. Two layers of reinforced polyethylene sheeting shall be used to cover the floor.

D. The entrance to the clean room shall have a lockable door. Provide suitable lockers for storage of Worker's street clothes. Storage for respirators along with replacement filters and disposable towels shall also be provided.

E. Provide a temporary shower with individual hot and cold water supplies and faucets. Provide a sufficient supply of soap and shampoo. There shall be one shower for every six Workers. The shower room shall be constructed in such a way so that travel through the shower chamber shall be through the shower. The shower shall not be able to be bypassed.
SECTION 028200 - ASBESTOS REMOVAL

F. Shower water shall be drained, collected and filtered through a system with at least a 5.0 micron particle size collection capability containing a series of several filters with progressively smaller pore sizes to avoid rapid clogging of the system. The filtered waste water shall then be discharged in accordance with applicable codes and the contaminated filters disposed of as asbestos waste.

G. The equipment room shall be used for the storage of tools and equipment. A walk-off pan filled with water shall be located in the Work Area outside the equipment room for Workers to clean foot coverings when leaving the Work Area. A labeled 6 mil plastic ACM waste bag for collection of contaminated clothing shall be located in this room.

H. The personal decontamination enclosure shall be cleaned and disinfected minimally at the end of each Work shift and as otherwise directed by the Asbestos Project Monitor.

3.03 WASTE DECONTAMINATION ENCLOSURE

A. Provide a waste decontamination enclosure contiguous to the Work area or as per Variance. The decontamination enclosure shall be attached to the Work Area and not located within it unless isolation barriers are installed. If the decontamination chamber is accessible to the public it shall be fully framed and sheathed to prevent unauthorized entry.

B. The waste decontamination enclosure system shall consist of a holding area, air lock and washroom. The airlock shall be a minimum of three feet from door to door. The entrance to the holding area shall have a lockable door.

C. The decontamination enclosure ceiling and walls shall be covered with one layer of opaque 6 mil polyethylene sheathing on walls and ceiling. Two layers of reinforced polyethylene sheeting shall be used to cover the floor.

D. Where there is only one egress from the Work Area, the holding area of the waste decontamination enclosure system may branch off from the personnel decontamination enclosure equipment room, which then serves as the waste wash room.

E. The waste wash room water shall be drained, collected, and filtered through a system with at least a 5.0 micron particle size collection capability containing a series of several filters with progressively smaller pore sizes to avoid rapid clogging of the system. The filtered waste water shall then be discharged in accordance with applicable codes and the contaminated filters disposed of as asbestos waste.

F. In small asbestos Projects where only one egress from the Work Area exists, the shower room may be used as a waste washroom. In this instance, the clean room shall not be used for waste storage, but shall be used for waste transfer to carts, which shall immediately be removed from this enclosure.

3.04 WORK AREA ENTRY AND EXIT PROCEDURES

A. Access to and from the asbestos Work Area is permitted only through the personnel decontamination enclosure unless otherwise stipulated in a Variance.

B. Workers shall sign the entry/exit log upon every entry and exit.

C. The following procedures shall be followed when entering the Work Area:
1. Before entering the Work Area, Workers shall proceed to the clean room, remove all street
clothes, and don protective clothing, equipment, and respirators.
2. Workers shall proceed from the clean room through the shower room and the equipment
room and into the Work Area.

D. The following procedures shall be followed when exiting the Work Area:
1. Before leaving the Work Area, gross asbestos contamination will be removed by
brushing, wet cleaning and/or HEPA vacuuming.
2. In the equipment room, Workers shall remove disposable clothing, but not respirators,
and shall place clothing in plastic disposal bags for disposal as contaminated debris prior
to entering the shower room.
3. Workers shall shower thoroughly while wearing respirators then wash respirator with
soap and water prior to removal.
4. Upon exiting the shower, Workers shall don new disposable clothing if the Work shift is
to continue or street clothes to exit area. Under no circumstances shall Workers enter
public non-Work Areas in disposable protective clothing.

E. If remote decontamination enclosures are permitted by applicable regulations or a Variance,
workers shall wear two disposable suits for all phases of Work. Workers exiting the work area
shall HEPA vacuum the outer suit, enter the airlock, remove the outer suit and then place it back
into the Work Area. A clean second suit shall be donned before exiting the airlock and
proceeding to the decontamination enclosure or another work area.

3.05 WORK AREA PREPARATION

A. Asbestos danger signs shall be posted at all approaches to the asbestos Work Area. Post all
emergency exits as emergency exits only on the Work Area side, post with asbestos caution
signs on the non-Work Area side. Provide all non-Work Area stairs and corridors accessible to
the asbestos Work Area with warning tapes at the base of stairs and beginning of corridors.
Warning tapes shall be in addition to caution signs.

B. Shut down and lock out the building heating, ventilating, and air conditioning systems.
Electrical systems and circuits shall also be shut down unless permitted to remain active per
applicable regulations and appropriately protected and labeled. Existing lighting sources shall
not be utilized. Provide temporary electric power and lighting as specified herein.

C. All surfaces and objects within the Work Area shall be pre-cleaned using HEPA vacuuming
and/or wet-wiping methods. Dry sweeping and any other methods that raise dust shall be
prohibited. ACM shall not be disturbed during pre-cleaning.

D. Movable objects within the Work Area shall be HEPA vacuumed and/or wet-wiped and
removed from the Work Area.

E. All non-movable equipment in the Work Area shall be completely covered with 2 layers of
polyethylene sheeting, at least 6 mil in thickness, and secured in place with duct tape and/or
spray adhesive.

F. Provide enclosure of the asbestos Work Area necessary to isolate it from unsealed areas of the
building in accordance with the approved asbestos Work plan and as specified herein.
G. Provide critical barriers by sealing off all openings including but not limited to windows, diffusers, grills, electrical outlets and boxes, doors, floor drains, and any other penetrations of the Work Area enclosure, using 2 layers of at least 6 mil polyethylene sheeting.

H. Provide isolation barriers by installing temporary framing and sheathing at openings larger than 32 square feet forming the limits of the asbestos Work Area. Sheathing thickness must be a minimum of 3/8 inch and all sheathing shall be caulked and the Work Area side sealed with two layers of 6 mil polyethylene sheeting.

I. Isolation barriers shall be installed at all elevator openings in the Work Area. Elevators running through the regulated abatement work area shall be shut down or isolated as per applicable regulations. Elevator controls shall be modified so that elevators bypass the Work Area.

J. Provide two layers of 6 mil polyethylene sheeting over all floor, wall, and ceiling surfaces. Isolation barriers shall also be covered with two layers (for a total of four layers). Sheeting shall be secured with spray adhesive and then sealed with duct tape. All joints in polyethylene sheathing shall overlap 12" minimum. Carpeting left in place shall be covered with 3/8 inch plywood sheathing prior to plasticizing.

K. Unless otherwise specified for removal, the Contractor shall either protect all fiberglass insulation on piping, ductwork, tanks, etc. in the Work Area using two layers of six mil polyethylene or remove the insulation as asbestos containing waste. If the Contractor elects to remove the fiberglass insulation, he shall be responsible for reinsulation if reinsulation of removed ACM is part of the Contract or Project.

L. Frame out emergency exits. Provide double layer 6 mil polyethylene sheeting and tape seal opening. Post as emergency exits only and mark with photoluminescent paint or signage. Provide a cutting tool on the Work Area side of exit.

M. Remove all items attached to or in contact with ACM only after the Work Area enclosure is in place. HEPA vacuum and wet wipe with amended water all removed items prior to their removal from the Work Area and before the start of asbestos removal operations.

N. Suspended ceiling tiles shall only be removed after Work Area preparation is complete. If possible, non-contaminated ceiling tiles shall be HEPA vacuumed and removed from the Work Area before asbestos removals begin. Contaminated ceiling tiles shall be disposed of as asbestos waste.

3.06 NEGATIVE AIR PRESSURE FILTRATION SYSTEM

A. Provide a portable asbestos filtration system that develops a minimum pressure differential of negative 0.02 in. of water column within all full enclosure areas relative to adjacent unsealed areas and that provides a minimum of 4 air changes per hour in the Work Area during abatement and 6 air changes for non-friable flooring and/or mastic removal.

B. Such filtration systems must be made operational after critical and isolation barriers are installed but before wall, floor, and ceilings are plasticized and shall be operated 24 hours per day during the entire Project until the final cleanup is completed and satisfactory results of the final air samples are received from the laboratory.
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C. The system shall include a series of pre-filters and filters to provide High Efficiency Particulate Air (HEPA) filtration of particles down to 0.3 microns at 100% efficiency and below 0.3 microns at 99.9% efficiency. Provide sufficient replacement filters to replace pre-filters every 2 hours, secondary pre-filters every 24 hours, and primary HEPA filters every 600 hours of operation.

D. A minimum of one additional filtration unit of at least the same capacity as the primary unit(s) shall be installed and fully functional to be used during primary unit (s) filter changing and in case of primary failure.

E. If the containment area includes either the entire floor of the building or an area greater than 15,000 sq. ft. on any floor, install a negative air cut off switch as required by NYC DEP regulations.

F. Upon electric power failure or shut-down of any filtration unit, all abatement activities shall stop immediately and only resume after power is restored and all filtration units are fully operating. For shut-downs longer than one half hour, all openings into the Work Area, including the decontamination enclosures, shall be sealed.

G. The Contractor shall provide a manometer to verify negative air pressure. Manometers shall be read twice daily and recorded within the Daily Project Log.

H. There shall be at least a 4 hour settling period after the Work Area is fully prepared and the negative filtration units have been started to ensure integrity of the barriers.

I. Once installed and operational, the Contractor’s Supervisor shall conduct daily inspections of the Work Area to ensure the airtight integrity of the enclosure and operation of the negative air system. Findings shall be recorded within the Daily Project Log. Inspections shall also be conducted on days when no abatement activities are in progress.

3.07 REMOVAL OF ASBESTOS CONTAINING MATERIALS

A. Asbestos-containing materials shall be removed in accordance with the Contract Documents and the approved Asbestos Work Plan. Only one type of ACM shall be abated at a time within a Work Area. Where there are multiple types of ACM requiring abatement, applicable regulations procedures for sequential abatement shall be followed.

B. Sufficiently wet asbestos materials with a low pressure, airless fine spray of surfactant to ensure full penetration prior to material removal. Re-wet material that does not display evidence of saturation.

C. One Worker shall continuously apply amended water while ACM is being removed.

D. Perform cutting, drilling, abrading, or any penetration or disturbance of asbestos containing material in a manner to minimize the dispersal of asbestos fibers into the air. Use equipment and methods specifically designed to limit generation of airborne asbestos particles. All power operated tools used shall be provided with HEPA equipped filtered local exhaust ventilation.

E. Upon removal of ACM from the substrate, the newly exposed surfaces shall be HEPA vacumed and/or wet cleaned. Surfaces must be thoroughly cleaned using necessary methods and any required solvents to completely remove any adhesive, mastic, etc.
F. All removed material shall be placed into 6 mil plastic disposal bags or other suitable container upon detachment from the substrate. ACM is not permitted to lie on the floor for any period of time.

G. Large components shall be wrapped in two layers of 6 mil polyethylene sheeting. Sharp components likely to tear disposal bags shall be placed in fiber drums or boxes and then wrapped with sheeting.

H. Power or pressure washers are not permitted for asbestos removal or clean-up procedures unless approved in a Variance.

I. All open ends of pipe and duct insulation not scheduled for removal shall be encapsulated using lag cloth.

J. All construction and demolition debris determined by the Environmental Consultant to be contaminated with asbestos shall be handled and disposed of as asbestos waste.

K. The use of metal shovels, metal dust pans, etc. are not permitted inside the work area.

L. The exit from the decontamination enclosure system shall be secured to prevent unauthorized entry.

3.08 EQUIPMENT AND WASTE CONTAINER DECONTAMINATION AND REMOVAL PROCEDURES

A. External surfaces of contaminated containers and equipment shall be cleaned by wet cleaning and/or HEPA vacuuming in the Work Area before moving such items into the waste decontamination enclosure system airlock by persons assigned to this duty. The persons in the Work Area shall not enter the airlock. No gross removal operations are permitted when waste transfer is in progress.

B. The containers and equipment shall be removed from the airlock by persons stationed in the washroom during waste removal operations. The external surfaces of containers and equipment shall be cleaned a second time by wet cleaning.

C. The cleaned containers of asbestos material and equipment are to be dried of any excessive pooled or beaded liquid, placed in uncontaminated 6 mil plastic bags or sheeting, as the item's physical characteristics demand, and sealed airtight.

D. The clean recontainerized items shall be moved into the airlock that leads to the holding area. Workers in the washroom shall not enter this airlock.

E. Containers and equipment shall be moved from the airlock and into the holding area by persons dressed in clean personal protective equipment, who have entered from the holding area.

F. The cleaned containers of asbestos material and equipment shall be placed in water tight carts with doors or tops that shall be closed and secured. These carts shall be held in the holding area pending removal. The carts shall be wet cleaned and/or HEPA vacuumed at least once each day.

G. The exit from the decontamination enclosure system shall be secured to prevent unauthorized entry.
H. Where the waste removal enclosure is part of the personnel decontamination enclosure, waste removal shall not occur during shift changes or when otherwise occupied. Precautions shall be taken to prevent short circuiting and cycling of air outward through the shower and clean room.

3.09 WORK AREA DECONTAMINATION, CLEANING, AND CLEARANCE PROCEDURES

A. Following completion of gross abatement and after all accumulations of asbestos waste materials have been containerized, the following decontamination procedures shall be followed unless modified by a Variance.

B. First Cleaning:
   1. All bagged asbestos waste and unnecessary equipment shall be decontaminated and removed from the Work Area.
   2. All surfaces in the Work Area shall be wet cleaned. A wet-purpose shop vacuum may be used to pick up excess liquid, and may either be decontaminated prior to removal from the Work Area or disposed of as asbestos waste.
   3. The Abatement Project Monitor shall conduct a visual inspection of the Work Area for cleanliness and completion of abatement.
   4. The Contractor shall then apply a thin coat of encapsulant to all surfaces in the Work Area that were not the subject of removal. In no event shall encapsulant be applied to any surface that was the subject of removal prior to obtaining satisfactory air monitoring results. Encapsulants shall be pigmented or tinted to provide an indication for completeness of coverage. The Abatement Project Monitor shall determine adequacy of coverage.
   5. After the encapsulant has been applied and the required waiting/settling and drying time has elapsed, the first layer of polyethylene sheeting shall then be removed and bagged.

C. Second Cleaning
   1. All surfaces in the Work Area shall be HEPA vacuumed and then wet cleaned.
   2. The Abatement Project Monitor shall conduct a second visual inspection of the Work Area for cleanliness.
   3. After the required waiting/settling and drying time has elapsed, the second layer of polyethylene sheeting shall be removed and bagged.

D. Third Cleaning
   1. All surfaces in the Work Area shall be HEPA vacuumed and then wet cleaned.
   2. The Abatement Project Monitor shall conduct a third visual inspection of the Work Area for cleanliness.
   3. After the required waiting/settling and drying time has elapsed, aggressive final clearance air sampling shall then be conducted by the Environmental Consultant provided no visible asbestos debris/residue; pools of liquid, or condensation remains.
   4. Upon receipt of satisfactory final clearance air sampling results, the negative air pressure equipment can then be shut down and the isolation and critical barriers removed. Following this, the decontamination enclosures shall be removed.

E. After isolation and critical barriers are removed, the Abatement Project Monitor and Contractor's Supervisor shall inspect the Work Area for cleanliness. If necessary, additional cleaning shall be performed by the Contractor as directed by the Abatement Project Monitor.
F. As a result of any visual inspection by the Asbestos Project Monitor or should air sampling results indicate high fiber levels, the Contractor will clean or reclean the affected areas at no additional expense to the Owner.

3.10 TENT ENCLOSURES

A. Tent enclosures may only be used where specifically permitted by applicable regulations or a Variance.

B. The Contractor shall restrict access to the immediate area where tent removal procedures are taking place using barrier tape and/or construction barriers. Caution signs shall be posted.

C. Personnel and waste decontamination enclosures shall be constructed. Configuration shall be as required by Project size.

D. The Work Area shall be precleaned. All objects and equipment that will remain in the restricted area during abatement shall be sealed with two layers of six mil polyethylene and tape.

E. The tent shall be a single use barrier constructed with a rigid frame and at least two layers of six mil polyethylene unless one layer of six mil polyethylene is otherwise permitted by applicable regulations. All seams shall be sealed airtight using duct tape and/or spray adhesive.

F. The tent shall be constructed with at least one airlock for worker/waste egress.

G. A monometer shall be used for all enclosures.

H. Negative air shall be maintained at four (4) air changes per hour for non-friable and glovebag abatement tent enclosure work areas.

I. OSHA compliance air monitoring is required per section 1.09.

J. ACM removal shall follow procedures defined in section 3.07.

K. Waste material shall be placed in properly labeled 6 mil plastic bags or other appropriate containers. The outside of the bags or containers shall be wet wiped and/or HEPA vacuumed and shall then be placed in a second bag/container before being transported to the waste storage container. All transportation of waste bags and containers outside the Work Area shall be in watertight carts. These carts shall be held in the holding area pending removal. The carts shall be wet cleaned and/or HEPA vacuumed at least once each day.

L. Following completion of gross abatement and after all accumulations of asbestos waste materials have been containerized, the following decontamination procedures shall be followed:
   1. All bagged asbestos waste and unnecessary equipment shall be decontaminated and removed from the Work Area.
   2. All surfaces in the Work Area shall be wet cleaned. A wet-purpose shop vacuum may be used to pick up excess liquid, and shall be decontaminated prior to removal from the Work Area.
   3. The Asbestos Project Monitor shall conduct a visual inspection of the Work Area for cleanliness and completion of abatement.
   4. After the waiting/settling and drying time requirements have elapsed, aggressive final clearance air sampling shall then be conducted by the Environmental Consultant.
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5. Upon receipt of satisfactory final clearance air sampling results, the tent shall be collapsed into itself, placed in suitable disposal bags, and transported to the waste decontamination enclosure. Isolation and critical barriers shall then be removed.

3.11 GLOVEBAG REMOVAL

A. Glovebag removals may only be used as specifically permitted by applicable regulations or a Variance. Glovebags may only be used on piping.

B. In addition to conformance with applicable regulations and Variances, glovebag removals are only permitted to be conducted within full containments or tent enclosures complying with these specifications.

C. The Contractor shall restrict access to the immediate area where tent/glovebag removal procedures are taking place using barrier tape and/or construction barriers. Caution signs shall be posted.

D. Personnel and waste decontamination enclosures shall be constructed. Configuration shall be as required by Project size.

E. Glovebag removals shall utilize commercially available glovebags of at least six mil thickness. Use shall be in accordance with the manufacturer’s instructions and the following minimum requirements:
   1. The sides of the glovebag shall be cut to fit the size pipe being removed. Tools shall be inserted into the attached tool pocket.
   2. The glovebag shall be placed around the pipe and the open edges shall be folded and sealed with staples and duct tape. The glovebag shall also be sealed at the pipe to form a tight seal.
   3. Openings shall be made in the glovebag for the wetting tube and HEPA vacuum hose. The opening shall be sealed to form a tight seal.
   4. All glovebags shall be smoke tested by the Asbestos Project Monitor under negative pressure using the HEPA vacuum before removal operations commence. Glovebags that do not pass the smoke test shall be resealed and then retested.
   5. After first wetting the materials to be removed, removal may commence. ACM shall be continuously wetted. After removal of the ACM, the piping shall be scrubbed or brushed so that no visible ACM remains. Open ends of pipe insulation shall be encapsulated.
   6. After the piping is cleaned, the inside of the glovebag shall be washed down and the wetting tube removed. Using the HEPA vacuum, the glovebag shall be collapsed and then twisted and sealed with tape with the ACM at the bottom of the bag.
   7. A disposal bag shall be placed around the glovebag that is then detached from the pipe. The disposal bag is then sealed and transported to the decontamination enclosure.

F. After glovebag removals are complete, containment/tent decontamination procedures shall be followed.

3.12 REMOVALS OF EXTERIOR NON-FRIABLE ACM

A. Except as modified by this section, removal of exterior non-friable ACM shall conform to all provisions of this specification.
B. Unless Variances have been otherwise obtained, removals shall be conducted in accordance with the provisions of applicable regulations.

c. The Work Area shall be the area from which ACM materials are being removed and shall extend 25 feet from the perimeter of the removal area.

D. Non-certified Workers are not allowed in the Work Area until the Work Area is cleared by the Asbestos Project Monitor.

E. Personnel and waste decontamination enclosures shall be constructed at a location in accordance with the approved Work Plan and applicable regulations. Unless located outside the Work Area, decontamination enclosures are not permitted to be constructed on the roof.

F. All openings (including but not limited to operable windows, doors, hatches, vents, ducts, and grilles) one story above, one story below, and within 25 feet of the work area shall be sealed with two layers of six mil polyethylene.

G. The removal of the ACM may require the use of scrapers, solvents, mastic removal chemicals, or other methods/procedures to ensure complete removal.

H. The Contractor is required to provide temporary protection of the building (i.e. roof, window openings, construction joints, etc.) at the end of each Work shift so as to maintain the building in a watertight condition.

I. Dumpsters used for waste storage shall be lined with two layers of six mil polyethylene and shall have a hard top. Where open-top dumpsters are permitted by a Variance, the top shall be closed with polyethylene flaps that are sealed at the end of each work shift.

J. Personal protective equipment, including respirators, shall be utilized and worn during all removal operations until the Work Area is cleared by the Asbestos Project Monitor.

K. If air samples collected during abatement indicate any airborne asbestos fiber concentration(s) at or above 0.01 f/cc, Work shall be stopped immediately and Work methods shall be altered to reduce the airborne asbestos fiber concentration(s).

L. Following completion of gross abatement and after all accumulations of asbestos waste materials have been containerized, the following decontamination procedures shall be followed:
   1. All surfaces in the Work Area shall be HEPA vacuumed and then wet cleaned.
   2. The Asbestos Project Monitor shall conduct a visual inspection of the Work Area for cleanliness prior to conducting final air clearance.
   3. Upon satisfactory results, the isolation and critical barriers shall be removed. Following this, the decontamination enclosures shall be removed.

3.13 NON-FRIABLE FLOORING AND/OR MASTIC REMOVALS

A. The following procedures may only be used for the removal of non-friable flooring and/or mastic materials using manual and chemical methods. These procedures shall not apply to beadblaster use or other abrasive abatement methods.

B. The Contractor shall restrict access to the immediate area where removals are taking place using barrier tape and/or construction barriers. Caution signs shall be posted.
C. Personnel and waste decontamination enclosures shall be utilized and shall be constructed at a location in accordance with the approved Work Plan.

D. The Work Area shall be prepared per applicable regulations.

E. Negative air shall be maintained at six (6) air changes per hour.

F. OSHA compliance air monitoring is required per section 1.09.

G. ACM removal shall follow procedures defined in section 3.07.

H. Waste material shall be placed in properly labeled 6 mil plastic bags or other appropriate containers. The outside of the bags or containers shall be wet wiped and/or HEPA vacuumed before being passed into the airlock for double-bagging. The bags or containers shall then be transported to the waste storage container. All transportation of waste bags and containers outside the Work Area shall be in watertight carts.

I. Following completion of gross abatement and after all accumulations of asbestos waste materials have been containerized, the following decontamination procedures shall be followed.
   1. All bagged asbestos waste and unnecessary equipment shall be decontaminated and removed from the Work Area.
   2. All surfaces in the Work Area shall be wet cleaned. A wet-purpose shop vacuum may be used to pick up excess liquid, and shall be decontaminated prior to removal from the Work Area.
   3. The Asbestos Project Monitor shall conduct a visual inspection of the Work Area for cleanliness and completion of abatement.
   4. The Contractor shall then apply a thin coat of encapsulant to all non-removal surfaces covered with plastic in the Work Area. In no event shall encapsulant be applied to any surface that was the subject of removal prior to obtaining satisfactory air monitoring results. Encapsulants shall be pigmented or tinted to provide an indication for completeness of coverage. The Asbestos Project Monitor shall determine adequacy of coverage.
   5. After the encapsulant has been applied and the required waiting/settling and drying time has elapsed, aggressive final clearance air sampling shall then be conducted by the Environmental Consultant.
   6. Upon receipt of satisfactory final clearance air sampling results, the isolation and critical barriers shall be removed. Following this, the decontamination enclosures shall be removed.

3.14 RESTORATION OF UTILITIES, FIRESTOPPING, AND FINISHES

A. If final inspection is required by NYC DEP regulations or Variance, the Contractor shall be responsible to submit the A-TRI form to NYC DEP.

B. After final clearance, remove locks and restore electrical and HVAC systems. All temporary power shall be disconnected, power lockouts removed and power restored. All temporary plumbing shall be removed.
SECTION 028200 - ASBESTOS REMOVAL

C. Finishes damaged by asbestos abatement activities including, but not limited to, plaster/paint damage due to duct tape and spray adhesives, and floor tile lifted due to wet or humid conditions, shall be restored prior to final payment.
   1. Finishes unable to be restored shall be replaced under this Contract.
   2. All foam and expandable foam products and materials used to seal Work Area openings shall be completely removed upon completion of abatement activities.

D. All penetrations (including, but not limited to, pipes, ducts, etc.) through fire rated construction shall be firestopped using materials and systems tested in accordance with ASTM E814 on Projects where reinsulation is part of the required work.

PART 4 DISPOSAL OF ASBESTOS WASTE

4.01 TRANSPORTATION AND DISPOSAL SITE
A. The Contractor's Hauler and Disposal Site shall be approved by the Owner.

B. The Contractor shall give twenty-four (24) hour notification prior to removing any waste from the site. Waste shall be removed from the site only during normal working hours unless otherwise specified. No waste may be taken from the site unless the Contractor and Environmental Consultant are present and the Environmental Consultant authorizes the release of the waste as described herein.

C. All waste generated as part of the asbestos project shall be removed from the site within ten (10) calendar days after successful completion of all asbestos abatement work.

D. Upon arrival at the Project Site, the Hauler must possess and present to the Environmental Consultant a valid New York State Department of Environmental Conservation Part 364 Asbestos Hauler’s Permit and any New York City required permit/license. The Environmental Consultant may verify the authenticity of the hauler’s permit with the proper authority.

E. The Hauler, with the Contractor and the Environmental Consultant, shall inspect all material in the transport container prior to taking possession and signing the Asbestos Waste Manifests.

F. Unless specifically approved by the Owner, the Contractor shall not permit any off-site transfers of the waste or allow the waste to be transported or combined with any other off-site asbestos material. The Hauler must travel directly to the disposal site as identified on the notifications with no unauthorized stops.

4.02 WASTE STORAGE CONTAINERS
A. All waste containers shall be fully enclosed and lockable (i.e. enclosed dumpster, trailer, etc.). No open containers will be permitted on-site (i.e. open dumpster with canvas cover, etc.) unless specifically permitted by a Variance. When asbestos contaminated waste must be kept on the work site overnight or longer, it shall be double bagged and stored in accordance with Federal, State, and local laws, including New York City Department of Sanitation Title 16, Chapter 8 of the Rules of New York City.

B. The Environmental Consultant shall verify that the waste storage container and/or truck tags (license plates) match that listed on the New York State Department of Environmental Conservation Part 364 permit. Any container not listed on the permit shall be removed from the site immediately.
C. The container shall be plasticized and sealed with two (2) layers of 6 mil polyethylene. Once on site, it shall be kept locked at all times, except during load out. The waste container shall not be used for storage of equipment or contractor supplies.

D. While on-site, the container shall be labeled with EPA Danger signage:
   DANGER
   CONTAINS ASBESTOS FIBERS
   AVOID CREATING DUST
   CANCER AND LUNG DISEASE HAZARD

E. The New York State Department of Environmental Conservation Asbestos Hauler's Permit number shall be stenciled on both sides and back of the container.

F. The container is not permitted to be loaded unless it is properly plasticized, has the appropriate danger signage affixed, and has the permit number appropriately stenciled on the container.

G. Before an enclosed container is removed from the Project Site for transportation to the Disposal Site, a seal will be placed on the door(s) of the container by the Environmental Consultant. The door(s) shall also be locked. The seals and locks shall be removed at the Disposal Site by the operator of the Disposal Facility and the seals shall be returned by the Disposal Facility to the Contractor.

H. If a lined and sealed open-top container is used pursuant to a Variance, a seal is not required.

I. The Owner may initiate random checks at the Disposal Site to ensure that the procedures outlined herein are complied with.

4.03 OWNER'S AND HAULER'S ASBESTOS WASTE MANIFESTS

A. An Asbestos Waste Manifest shall be provided by the Owner (Appendix A) and shall be utilized in conjunction with the Asbestos Hauler's Manifest.

B. The Owner's Manifest and the Hauler's Manifest shall be completed by the Contractor and verified by the Environmental Consultant that all the information and amounts are accurate and the proper signatures are in place.

C. The Manifests shall have the appropriate signatures of the Environmental Consultant, the Contractor, and the Hauler representatives prior to any waste being removed from the site.

D. Copies of the completed Owner's Manifest and the Hauler's Manifest shall be retained by the Environmental Consultant and the Contractor and shall remain on site for inspection.

E. Upon arrival at the Disposal Site, the Owner's Manifest and the Hauler's Manifest shall be signed by the Disposal Facility operator to certify receipt of ACM covered by the manifest.

F. The Disposal Facility operator shall return the original Owner's Manifest and the Hauler's Manifest and the container seals to the Contractor.

G. The Contractor shall forward copies of the Owner's Manifest and the Hauler's Manifest and the container seals to the Environmental Consultant within 14 days of the waste container being 028200-27
removed from the site. Failure to do so may result in payment being withheld from the Contractor.

H. The Contractor shall utilize the Waste Disposal Log provided by the Owner. This log shall be maintained by the Project Supervisor and shall be kept on site at all times. (See Appendix B.)

I. Originals of all waste disposal manifests, seals, and disposal logs shall be submitted by the Contractor to the Owner with the final close-out documentation.
SECTION 028200 - ASBESTOS REMOVAL

APPENDIX A

ASBESTOS WASTE MANIFEST
SECTION 028200 - ASBESTOS REMOVAL

APPENDIX B

WASTE MANIFEST LOG
SECTION 028200 - ASBESTOS REMOVAL

APPENDIX C

VARIANCES
NY Rising – Governor’s Office of Storm Recovery
GOSR Work Order Number: NTF-1-DES
Edgewater Park Volunteer Fire Department — Storm Hardening and Abatement

SECTION 028200 - ASBESTOS REMOVAL

APPENDIX D

DRAFT ACP 7, WORK PLACE SAFETY PLAN

028200-33
PART 1 GENERAL

1.1 GENERAL

A. Description of Work

1. This specification covers the removal and disposal of lead-based paint (LBP) or lead-containing paint (LCP). Products shall be as follows or as directed by GOSR. Demolition and removal of materials shall be as required to support the work.

2. This lead removal project will consist of the removal and disposal of LBP at North Tower Firehouse of Edgewater Park, NY. This facility is located at 1 Adee Drive, Edgewater Park, NY 10465. This work is in relation to the Storm Hardening project, GOSR work order number: NTF-1-DES.

3. Lead-Based Paint abatement activities shall be performed prior to any asbestos abatement activities or demolition work involving the affected surfaces. This will allow for coordinate waste streams and phasing of work.

4. The work shall include but not be limited to the removal of the following materials:

<table>
<thead>
<tr>
<th>Floor/Level and Work Area Number</th>
<th>Description of LBP Material</th>
<th>Approximate Quantity (SF/LF/Unit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server Room — 1st Floor — WA 1</td>
<td>Rear Wall - Wall Paint — Beige</td>
<td>19.0 SF</td>
</tr>
<tr>
<td>Stairwell and Adjacent Rooms — 1st Floor through 3rd Floor — WA 2</td>
<td>1st Floor Stairwell - Wall Paint — Beige</td>
<td>120.0 SF</td>
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<tr>
<td></td>
<td>1st Floor Stairwell - Handrail Paint — Beige</td>
<td>6.5 SF</td>
</tr>
<tr>
<td></td>
<td>1st Floor Stairwell - Baluster Paint — Black</td>
<td>64.0 SF</td>
</tr>
<tr>
<td></td>
<td>1st Floor Stairwell - Stair Tread Paint — Grey</td>
<td>39.0 SF</td>
</tr>
<tr>
<td></td>
<td>1st Floor Stairwell - Stair Stringer Paint — Black</td>
<td>13.0 SF</td>
</tr>
<tr>
<td></td>
<td>2nd Floor Stairwell - Wall Paint — Beige</td>
<td>184.0 SF</td>
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<td>2nd Floor Stairwell - Baseboard Paint — Beige</td>
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<td>2nd Floor Stairwell - Stair Tread Paint — Grey</td>
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<td></td>
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<td>2nd Floor Stairwell - Window Case Paint — Brown</td>
<td>30.0 SF</td>
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<tr>
<td></td>
<td>2nd Floor Storage — Door Back Paint — Beige</td>
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<td></td>
<td>2nd Floor Storage — Baseboard Paint — Beige</td>
<td>12.0 SF</td>
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<td>3rd Floor Storage — Wall Paint — Blue</td>
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<tr>
<td></td>
<td>3rd Floor Storage 2 — Wall Paint - Brown</td>
<td>64.0 SF</td>
</tr>
</tbody>
</table>

B. Definitions

1. Action Level: Employee exposure, without regard to use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter (μg/m³) of air averaged over an eight-hour period in an occupational/industrial environment.

2. Area Sampling: Sampling of lead concentrations within the lead control area and inside the physical boundaries, which is representative of the airborne lead concentrations but is not collected in the breathing zone of personnel. This sampling will be conducted by GOSR’s Third-Party Consultant, if required.

3. Certified Contractors/Firms and Renovators: Certified Contractors/Firms under 40 CFR 745.226 and 745.89(d) and Certified Renovators under 40 CFR 745.90(b) to inspect, assess or remove LBP, dust or soil. Certification as required to provide notification to the United States Environmental Protection
SECTION 028300 – REMOVAL AND DISPOSAL OF LEAD-CONTAINING PAINT

Agency (EPA) prior to the commencement of LBP abatement activities in residential dwellings and child occupied facilities.
4. Contaminated Room: Room for removal of contaminated personal protective equipment (PPE).
5. Decontamination Shower Facility: That facility that encompasses a clean clothing storage room, and a contaminated clothing storage and disposal rooms, with a shower facility in between.
6. Eight-Hour Time Weighted Average (TWA): Airborne concentration of lead to which an employee is exposed, averaged over an eight-hour workday as indicated in 29 CFR 1926.62.
7. EPA Notification: The certified contractor shall notify the EPA at least five business days prior to conducting LBP abatement in residential or child occupied facilities. The notification requirements for updating and canceling projects shall also be completed as required.
8. High Efficiency Particulate Air (HEPA) Filter Equipment: HEPA filtered vacuuming equipment with a UL 586 filter system capable of collecting and retaining lead-containing paint (LCP) dust. A high efficiency particulate filter means 99.97 percent efficient against 0.3 micron or larger size particles.
9. Lead: Metallic lead, inorganic lead compounds, and organic lead soaps.
10. Lead-Based Paint (LBP): Paint or other surface coating that contains lead in excess of 1.0 milligrams per centimeter squared or 0.5 percent by weight.
11. Lead-Based Paint Hazard (LBP Hazard): Any condition that causes exposure to lead from lead-contaminated dust, lead-contaminated soil, LBP that is deteriorated or present in accessible surfaces, friction surfaces, or impact surfaces that would result in adverse human health effects.
12. Lead-Containing Paint (LCP): LBP or other similar surface coating containing lead or lead compound in excess of 0.06 percent by weight of the total nonvolatile content of the paint.
13. Lead Control Area: An enclosed area or structure, constructed as a temporary containment equipped with HEPA filtered local exhaust, which prevents the spread of lead dust, paint chips, or debris existing as a condition of LBP removal operations. The lead control area is also isolated by physical boundaries to prevent unauthorized entry of personnel.
14. Lead Permissible Exposure Limit (PEL): Fifty Jtg/m³ of air as an eight-hour TWA as determined by 29 CFR 1926.62. If an employee is exposed for more than eight hours in a workday, the PEL shall be determined by the following formula: PEL (micrograms/cubic meter of air) = 400/number of hours worked per day.
15. Personal Sampling: Sampling of airborne lead concentrations within the breathing zone of an employee to determine the eight-hour TWA concentration in accordance with 29 CFR 1926.62. Samples shall be representative of the employees' work tasks. The sampling, conducted by the Contractor, shall provide information to complete the required exposure assessment to identify the level of exposure a worker would be subject to without respiratory protection. Whenever there has been a change of equipment, process, control, personnel or a new task has been initiated, the Contractor shall conduct additional personal sampling.
16. Physical Boundary: Area physically roped or partitioned off around an enclosed lead control area to limit unauthorized entry of personnel. As used in this section, "inside boundary" shall mean the same as "outside lead control area but inside boundary."
17. Project Supervisor (PS): As used in this section, refers to a person employed by the Contractor who is trained and certified in the recognition and control of lead hazards in accordance with current federal, State, and local regulations. The PS shall be trained and certified to inspect, assess, or remove LBP, dust or soil.
18. Third-Party Consultant: GOSR will provide a Third-Party Consultant to provide pre-work assessments, project monitoring assessments for the work area and surrounding areas, final clearance assessments, and waste shipment sampling/inspection.
19. Worker certifications: All workers inspecting, assessing, or removing LBP, dust or soil who are trained and certified to conduct these activities. As per 40 CFR Part 745 and 29 CFR 1926.
C. Pre-Work Submittals: Within 7 days prior to the pre-construction conference, the Contractor shall submit electronic copies of the documents listed below, with 1 copy going directly to the GOSR Project Management, 1 Copy to the GOSR Code Compliance Unit and 1 copy going directly to the environmental consultant for review and approval prior to the commencement of lead removal activities:

1. Certificates
   a. Certifications of Project Supervisor and Contractor.
   b. Testing laboratory qualifications.
   c. Contractor qualifications — Firm/Supervisor/Renovator/Worker.
   d. NYS Department of Environmental Conservation Waste Transporter Permit.
   e. EPA approved hazardous waste treatment or disposal facility permit for lead disposal.
   f. Letter of acknowledgement from waste treatment or disposal facility.
   g. EPA Notification of Lead-Based Paint Abatement Activities (Appendix C) with proof of transmittal (i.e. certified mail return receipt).

2. Lead-Based Paint/Lead-Containing Paint Removal Plan (LBP/LCPRP) including PS approval (signature, date, and certification number):
   a. All Work Areas/containments numbered sequentially.
   b. Location of water and electrical connections to building services.
   c. Waste transport routes through the building to the waste storage container.
   d. The job specific plan for the work procedures to be utilized.
   e. The job specific plan for worker protection issues regarding personal protective equipment, the work procedures, and exposure assessment procedures.
   f. The job specific plan for protecting the work area, ventilation, and drainage systems.
   g. Collected waste water disposal.
   h. Paint debris disposal plan (hazardous and non-hazardous waste).
   i. Containment design
      1) The containment design proposed for use during surface preparation and cleanup activities as required to perform the work. The Plan for staging, installing, moving, and removing the containment. Include all data, calculations and assumptions used for the design of the containment and ventilation system to ensure that airborne lead concentrations of 30 pg/m³ of air and baseline lead dust/soil concentrations are not reached or exceeded outside of the lead control area.
      2) Methods to be used to verify adequate air flow characteristics and negative pressure within containment
      3) The plan for staging and storing any waste material
      4) The plan for establishing barriers to control access of personnel within the exposure zones.

3. Compliance Plan
   a. Schedule and work area drawing
   b. Waste Transporter Permit
   c. Waste Profile Sheet
   d. Waste Disposal Logs
   e. Final Clearance Evaluation — Provide written procedures identifying the methods that will be used to conduct final project cleanup and the final cleanliness inspections and evaluations that will be undertaken in compliance with the project requirements.

D. On-Site Submittals:

1. All submittals, documentation, and postings required to be maintained on-site during abatement activities.
   a. Copy of “approved” pre-work submittal package, removal plan and compliance plan
   b. Employee training certifications
   c. Certification of medical examinations

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d. Respirator Fit Test documentation
e. Manufacturer's Instructions
   1) Chemicals and equipment
   2) Materials
   3) Safety data sheets for all chemicals
f. List of emergency telephone numbers.
g. EPA Notification of Lead-Based Paint Abatement Activities (Appendix C).

E. Project Close-out Submittals:
   1. Within 30 days of the completion of each abatement phase, the Contractor shall submit one electronic copy of the documents listed below to GOSR Code Compliance and one copy to the environmental consultant for review and approval prior to Contractor's final payment. Once GOSR Code Compliance approves the close-out submittal, the Contractor shall provide three sets of the approved close-out documents (double-sided and bound) to GOSR Project Management, including one set to be distributed to the facility.
   a. All waste disposal shipment records/manifest and disposal logs (Appendix A). Original waste shipment records shall be sent to GOSR Code Compliance. When GOSR is not the owner, send the original to the owner and a fully executed “copy” to GOSR Code Compliance.
   b. Daily progress log, including the entry/exit log.
   c. Provide the Contractor’s Acknowledgement Statement (Appendix B) that lists all Workers used in the performance of the Project, including name and US EPA certification number. The Statement shall be notarized (Original notarized statement shall be sent to GOSR Code Compliance).
   d. Disposal Site/Landfill Permit from applicable regulatory agency.

F. Pre-Construction Conference
   1. Contractor's scope of Work, Work plan, and schedule to include number of workers and shifts.
   2. Contractor's safety and health precautions including protective clothing and equipment and decontamination procedures.
   3. Environmental Consultant’s duties, functions, and authority.
   4. Contractor's Work procedures including:
      b. Respiratory protection.
      c. Disposal procedures.
      d. Cleanup procedures.
      e. Fire exits and emergency procedures.
   5. Contractor's required pre-work and on-site submittals, documentation, and postings.
   6. Contractor's plan for twenty-four (24) hour Project security both for prevention of theft and for barring entry of unauthorized personnel into Work Areas.
   7. Temporary utilities.
   8. Handling of furniture and other moveable objects.
   10. Waste disposal requirements and procedures, including use of the Owner supplied waste shipment record.

G. Qualifications of PS: Submit name, address, telephone number and the EPA certification number of the PS selected to perform responsibilities specified in paragraph entitled “Project Supervisor (PS) Responsibilities.” Provide at least two years of previous experience with LBP abatement projects. Submit proper documentation that the PS is trained and certified in accordance with federal, State, and local laws.
H. Certified Firm/Contractor Qualifications: Firms/Contractors that perform renovations for compensation must apply to EPA for certification to perform renovations or dust sampling. A firm must submit to EPA a completed “Application for Firms,” signed by an authorized agent of the firm, and pay at least the correct amount of fees. Firms performing renovations must ensure that:
1. All individuals performing renovation activities on behalf of the firm are either certified renovators or have been trained by a certified renovator in accordance with 40 CFR 745.90.
2. A certified renovator is assigned to each renovation performed by the firm and discharges all of the certified renovator responsibilities identified in 40 CFR 745.90.
3. All renovations performed by the firm are performed in accordance with the work practice standards in 40 CFR 745.85.
4. The pre-renovation education requirements of 40 CFR 745.84 have been performed.
5. The recordkeeping requirements of 40 CFR 745.86 are met.

I. Certified Renovator and Dust Sampling Technician Qualifications: Renovators and dust sampling technicians must be certified by EPA. Certification requires that individuals must successfully complete the appropriate course accredited by EPA under 40 CFR 745.225 or by a State or Tribal program that is authorized by EPA. EPA renovator certification allows the certified individual to perform renovations and EPA renovator certification allows the certified individual to perform renovations. Certified renovators must ensure compliance with EPA 40 CFR 745 and perform or direct those that perform all renovation tasks. Certified renovators must also:
1. Provide training to workers on the work practices required by 40 CFR 745.85(a) that they will be using in performing their assigned tasks.
2. Be physically present at the work site when required signs are posted, while the work area containment is being established, and while the work area cleaning is performed.
3. Regularly direct work being performed by other individuals to ensure that the work practices required are being followed, including maintaining the integrity of the containment barriers and ensuring that dust or debris does not spread beyond the work area.
4. Be available, either on-site or by telephone, at all times that renovations are being conducted.
5. Use an acceptable test kit to determine whether components to be affected by the renovation contain lead-based paint when requested by the party contracting for renovation services.
6. Have with them at the work site copies of their initial course completion certificate and their most recent refresher course completion certificate.
7. Prepare records required by 40 CFR 745.86(b)(l)(ii) and (6).

I. Testing Laboratory: Submit the name, address, and telephone number of the testing laboratory selected to perform the air sampling and display testing. The air sampling results shall be utilized for reporting of airborne concentrations of lead for Contractor worker protection issues. This sampling will be separate from the Third-Party Consultant sampling that will be conducted by GOSR. Use a laboratory accredited under the EPA National Lead Laboratory Accreditation Program (NLLAP) by either the American Association for Laboratory Accreditation (A2LA) or the American Industrial Hygiene Association (AIHA) and that is successfully participating in the Environmental Lead Proficiency Analytical Testing (ELPAT) program to perform sample analysis.

K. Lead-Based Paint/Lead-Containing Paint Removal Plan (LBP/LCPRP): Information to also be included in the LBP/LCPRP not indicated in Section 1.1, C 5 & 6 shall include but not be limited to the following items. The plan shall include a sketch showing the location, size, and details of lead control areas, location and details of the decontamination facilities. Include in the plan, eating, drinking, smoking, and sanitary procedures, interface of trades and sequencing of lead related work. Include site preparation and cleanup procedures. Include occupational and environmental sampling (if any by the Contractor), frequency, and duration of sampling.
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L. Occupational and Environmental Sampling Results: Submit occupational and environmental sampling results to GOSR within three working days of collection, signed by the testing laboratory responsible official, the employee that performed the sampling, and the PS.
   1. The sampling results shall represent each job classification, or if working conditions are similar to previous jobs by the same employer, provide previously collected exposure data that can be used to estimate worker exposures in accordance with 29 CFR 1926.62. The data shall represent the worker's regular daily exposure to lead.
   2. Submit worker exposure data conducted during the task based trigger operations of 29 CFR 1926.62.
   3. The initial monitoring shall determine the requirements for further monitoring and the need to fully implement the control and protective requirements including the compliance program (LBP/LCP) in accordance with 29 CFR 1926.62.

M. Occupational and Environmental Assessment Data Report:
   1. Some LBP/LCP removal work may not require full implementation of the requirements of 29 CFR 1926.62. Based on the experience of the Contractor and/or the use of a specific process or method for performing the work, the Contractor may be able to provide historic data (previous 12 months) to demonstrate that airborne exposures are controlled below the action level. Such methods or controls shall be fully presented in the LBP/LCPRP. To reduce the full implementation of 29 CFR 1926.62, the Contractor shall provide documentation in an Assessment Data Report.
   2. Submit occupational and environmental assessment report to GOSR prior to start of work, signed by the testing laboratory responsible official, and the PS.
      a. Submit a report that supports the determination regarding the reduction of the need to fully implement the requirements of 29 CFR 1926.62 and supporting the LBP/LCP. The exposure assessment shall represent each job classification, or if working conditions are similar to previous jobs by the same employer, provide previously collected exposure data that can be used to estimate worker exposures in accordance with 29 CFR 1926.62. The data shall represent the worker's regular daily exposure to lead for stated work.
      b. Submit worker exposure data conducted during the task based trigger operations of 29 CFR 1926.62 with a complete process description in supporting a negative assessment.
      c. The initial assessment shall determine the requirement for further monitoring and the need to fully implement the control and protective requirements including the compliance program (LBP/LCPRP) in accordance with 29 CFR 1926.62.

N. Quality Assurance
   1. Medical Examinations: Initial medical surveillance as required by 29 CFR 1926.62 shall be made available to all employees exposed to lead at any time (one day) above the action level. Full medical surveillance shall be made available to all employees on an annual basis who are or may be exposed to lead in excess of the action level for more than 30 days a year or as required by 29 CFR 1926.62. Adequate records shall show that employees meet the medical surveillance requirements of 29 CFR 1926.33, 29 CFR 1926.62, and 29 CFR 1926.103.
      a. Medical Records: Maintain complete and accurate medical records of employees for a period of at least 30 years or for the duration of employment plus 30 years, whichever is longer.
      b. Medical Surveillance: Provide medical surveillance to all personnel exposed to lead as indicated in 29 CFR 1926.62.
   2. Project Supervisor (PS) Responsibilities
      a. Certify training as meeting all federal, State, and local requirements.
      b. Review and approve LBP/LCPRP for conformance to the applicable referenced standards.
      c. Continuously inspect LBP removal work for conformance with the approved Pl3n.
      d. Perform air sampling, if required by Contractor.
      e. Ensure work is performed in strict accordance with specifications at all times.
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f. Control work to prevent hazardous exposure to human beings and to the environment at all times.
g. Certify the conditions of the work as called for elsewhere in this specification.

a. Training Certification: Submit a certificate for each employee, signed and dated by the approved training source, stating that the employee has received the required lead training.

4. Respiratory Protection Program
a. Furnish each employee required to wear a negative pressure respirator or other appropriate type with a respirator fit test at the time of initial fitting and at least annually thereafter as required by 29 CFR 1926.62.


6. Hazardous Waste Management: The Hazardous Waste Management Plan shall comply with applicable requirements of federal, State, and local hazardous waste regulations and address:
a. Identification and classification of hazardous wastes associated with the work.
b. Estimated quantities of wastes to be generated and disposed of.
c. Names and qualifications of each Contractor that will be transporting, storing, treating, and/or disposing of the wastes. Include the facility location and operator and a 24-hour point of contact. Furnish two copies of EPA, or State and local hazardous waste permit applications or permits or manifests, as required, and co-ordinate with GOSR regarding the use of an existing EPA Identification number or developing separate EPA Identification numbers.
d. Names, qualifications, and training (experience and training) of personnel who will be working on-site with hazardous wastes.
e. List of waste handling equipment to be used in performing the work, to include cleaning, volume reduction, and transport equipment.
f. Spill prevention, containment, and cleanup contingency measures including a health and safety plan to be implemented in accordance with 29 CFR 1926.65.
g. Work plan and schedule for waste containment, removal and disposal. Wastes shall be cleaned up and containerized daily.
h. Unit cost for hazardous waste disposal according to this plan.

7. Environmental, Safety, and Health Compliance: In addition to the detailed requirements of this specification, comply with laws, ordinances, rules, and regulations of Federal, State, and local authorities regarding removing, handling, storing, transporting, and disposing of lead waste materials. Comply with the applicable requirements of the current issue of 40 CFR Part 745 and 29 CFR 1926.62. Submit matters regarding interpretation of standards to GOSR for resolution before starting work. Where specification requirements and the referenced documents vary, the most stringent requirement shall apply.

8. Pre-Construction Conference: Along with the PS, meet with GOSR and any facility or consultant representatives to discuss in detail the hazardous waste management plan and the LBP/LCPRP, including work procedures and precautions for the removal plan.

O. Equipment

1. Respirators: Furnish appropriate respirators approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services, for use in atmospheres containing lead dust. Respirators shall comply with the requirements of 29 CFR 1926.62.

2. Special Protective Clothing: Furnish personnel who will be exposed to lead-contaminated dust with proper disposable uncontaminated, reusable protective whole-body clothing, head covering, gloves,
and foot coverings as required by 29 CFR 1926.62. Furnish proper disposable plastic or rubber gloves to protect hands. Reduce the level of protection only after obtaining approval from the PS.

3. Vacuum Filters: UL 586 labeled HEPA filters.

4. Equipment for Owner's Personnel: Furnish GOSR with two complete sets of personal protective equipment (PPE) daily, as required herein, for entry into and inspection of the paint removal work within the lead controlled area. PPE shall include disposable whole-body covering, including appropriate foot, head, and hand protection. PPE shall remain the property of the Contractor. The Owner will provide respiratory protection for GOSR and their representatives.

P. Removal
1. Title to Materials: Materials resulting from demolition work, except as specified otherwise, shall become the property of the Contractor and shall be disposed of in accordance with all federal, State and local regulations.

1.2 PRODUCT
A. Chemicals: Submit applicable Material Safety Data Sheets for all chemicals used in paint removal work. Use the least toxic product approved by GOSR.

1.3 EXECUTION
A. Protection
1. Notification: Notify GOSR 20 days prior to the start of any LBP removal work.
2. Notification: Notify the EPA at least 5 days prior to conducting LBP abatement activities in a residential dwelling or child occupied facility.
3. Notification: Distribute notification to owner(s) and resident(s) according to EPA RRP rule 40 CFR 745, Subpart E Section 745.84 Information distribution requirements.
4. Occupant protection: Firms must post signs clearly defining the work area and warning occupants and other persons not involved in renovation activities to remain outside of the work area. To the extent practicable, these signs must be in the primary language of the occupants. These signs must be posted before beginning the renovation and must remain in place and readable until the renovation and the post-renovation cleaning verification have been completed. If warning signs have been posted in accordance with 24 CFR 35.1345(b)(2) or 29 CFR 1926.62(m), additional signs are not required by this section.
5. Third-Party Oversight
   a. Full-time third-party oversight is required for all lead-based paint removals.
6. Lead Control Area Requirements—Interior Renovations
   a. Before beginning the renovation, the firm must isolate the work area so that no dust or debris leaves the work area while the renovation is being performed. In addition, the firm must maintain the integrity of the containment by ensuring that any plastic or other impermeable materials are not torn or displaced, and taking any other steps necessary to ensure that no dust or debris leaves the work area while the renovation is being performed. The firm must also ensure that containment is installed in such a manner that it does not interfere with occupant and worker egress in an emergency.
   b. Before beginning the renovation, the firm must:
      1) Remove all objects from the work area, including furniture, rugs, and window coverings, or cover them with plastic sheeting or other impermeable material with all seams and edges taped or otherwise sealed.
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2) Close and cover all ducts opening in the work area with taped-down plastic sheeting or other impermeable material.
3) Close windows and doors in the work area. Doors must be covered with plastic sheeting or other impermeable material. Doors used as an entrance to the work area must be covered with plastic sheeting or other impermeable material in a manner that allows workers to pass through while confining dust and debris to the work area.
4) Cover the floor surface, including installed carpet, with taped-down plastic sheeting or other impermeable material in the work area 6 feet beyond the perimeter of surfaces undergoing renovation or a sufficient distance to contain the dust, whichever is greater. Floor containment measures may stop at the edge of the vertical barrier when using a vertical containment system consisting of impermeable barriers that extend from the floor to the ceiling and are tightly sealed at joints with the floor, ceiling and walls.
5) Use precautions to ensure that all personnel, tools, and other items, including the exteriors of containers of waste, are free of dust and debris before leaving the work area.

7. Lead Control Area Requirements — Exterior Renovations
   a. Before beginning the renovation, the firm must
      1) Close all doors and windows within 20 feet of the renovation. On multi-story buildings, close all doors and windows within 20 feet of the renovation on the same floor as the renovation, and close all doors and windows on all floors below that are the same horizontal distance from the renovation.
      2) Ensure that doors within the work area that will be used while the job is being performed are covered with plastic sheeting or other impermeable material in a manner that allows workers to pass through while confining dust and debris to the work area.
      3) Cover the ground with plastic sheeting or other disposable impermeable material extending 10 feet beyond the perimeter of surfaces undergoing renovation or a sufficient distance to collect falling paint debris, whichever is greater, unless the property line prevents 10 feet of such ground covering. Ground containment measures may stop at the edge of the vertical barrier when using a vertical containment system.

8. If the renovation will affect surfaces within 10 feet of the property line, the renovation firm must erect vertical containment or equivalent extra precautions in containing the work area to ensure that dust and debris from the renovation does not contaminate adjacent buildings or migrate to adjacent properties. Vertical containment or equivalent extra precautions in containing the work area may also be necessary in other situations in order to prevent contamination of other buildings, other areas of the property, or adjacent buildings or properties.

9. Protection of Existing Work to Remain: Perform paint removal work without damage or contamination of adjacent areas. Where existing work is damaged or contaminated, restore work to its original condition or better.

10. Boundary Requirements: Provide physical boundaries around the lead control area by roping off the area designated in the work plan or providing curtains, portable partitions or other enclosures to ensure that airborne concentrations of lead will not reach 30 ug/m³ of air outside of the lead control area.
    a. Physical Boundary: Provide physical boundaries around the lead control area by roping off the area designated in the work plan or providing curtains, portable partitions or other enclosures to ensure that airborne concentrations of lead will not reach 30 pg/m³ of air outside of the lead control area.
    b. Warning Signs: Provide warning signs at approaches to lead control areas. Locate signs at such a distance that personnel may read the sign and take the necessary precautions before entering the area. Signs shall comply with the requirements of 29 CFR 1926.62.

11. Furnishings:
    a. The Owner will remove furniture and equipment from the building before LBP removal work begins.
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or
Furniture and equipment will remain in the building. Protect and cover furnishings or remove furnishings from the work area and store in a location approved by GOSR.

or
Existing furniture and equipment is lead contaminated, decontaminate, dispose of as lead contaminated waste.

12. Heating, Ventilating and Air Conditioning (HVAC) Systems: Shut down, lock out, and isolate HVAC systems that supply, exhaust, or pass through the lead control areas. Seal intake and exhaust vents in the lead control area with 6 mil plastic sheet and tape. Seal seams in HVAC components that pass through the lead control area. Provide temporary HVAC system for areas in which HVAC has been shut down outside the lead control area.

13. Decontamination Shower Facility: Provide clean and contaminated change rooms and shower facilities in accordance with this specification and 29 CFR 1926.62.

14. Eye Wash Station: Where eyes may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes shall be provided within the work area.

15. Mechanical Ventilation System
   a. Use adequate ventilation to control personnel exposure to lead in accordance with 29 CFR 1926.62.
   b. To the extent feasible, use fixed local exhaust ventilation connected to HEPA filters or other collection systems, approved by the PS. Local exhaust ventilation systems shall be designed, constructed, installed, and maintained in accordance with ANSI Z9.2.
   c. Vent local exhaust outside the building only and away from building ventilation intakes.
   d. Use locally exhausted, power actuated, paint removal tools.

16. Personnel Protection. Personnel shall wear and use protective clothing and equipment as specified herein. Eating, smoking, or drinking or application of cosmetics is not permitted in the lead control area. No one will be permitted in the lead control area unless they have been appropriately trained and provided with protective equipment.

B. Work Procedures: Perform removal and disposal of LBP in accordance with approved LBP/LCPRP. Use procedures and equipment required to limit occupational and environmental exposure to lead when LBP is removed in accordance with 29 CFR 1926.62, except as specified herein.

1. Personnel Exiting Procedures: Whenever personnel exit the lead-controlled area, they shall perform the following procedures and shall not leave the work place wearing any clothing or equipment worn during the work day:
   a. Vacuum themselves off.
   b. Remove protective clothing in the contaminated change room, and place them in an approved impermeable disposal bag.
   c. Shower or Wash hands and face at the site, as directed, don appropriate disposable or uncontaminated reusable clothing; move to an appropriate facility; shower.
   d. Change to clean clothes prior to leaving the physical boundary designated around the lead control area.

2. Sampling
   a. Air sample for lead in accordance with 29 CFR 1926.62 and as specified herein. Air sampling shall be directed or performed by the PS.
      1) The PS shall be on the job site directing the air sampling and inspecting the LBP removal work to ensure that the requirements of the contract have been satisfied during the entire LBP removal operation.
      2) Collect personal air samples on employees who are anticipated to have the greatest risk of exposure as determined by the PS. In addition, collect air samples on at least 25 percent
of the work crew or a minimum of two employees; whichever is greater, during each work shift.

3) Submit results of air samples, signed by the PS, within 24 hours after the air samples are taken. Notify GOSR immediately of exposure to lead at or in excess of the action level of 30 Jig/m³ of air outside of the lead control area.

b. Surface and/or soil sampling shall be conducted as required for residential dwellings and child occupied facilities or as may be required for high profile, sensitive work areas, such as administrative buildings, kitchens, barracks, etc., to determine clearance (i.e., that the work has not contaminated surfaces within and adjacent to the control area) will be performed by a Third-Party Consultant provided by GOSR. Notification to GOSR will also outline any sampling requirements to be provided for the work.

1) Before any work begins, GOSR's Third-Party Consultant will collect and analyze baseline soil or wipe samples in accordance with methods defined in federal, State, and local standards inside and outside of the physical boundary to assess the degree of soil and/or dust contamination prior to LBP removal activities are initiated.

2) After all work is completed, GOSR's Third-Party Consultant will collect and analyze soil or wipe samples in accordance with methods defined in federal, State, and local standards inside and outside of the physical boundary to assess the degree of soil and/or dust contamination after the LBP removal activities are completed.

c. Area Air Sampling During Paint Removal Work: GOSR will conduct area air sampling while LBP removal operations are performed, in areas immediately adjacent to the lead control area. Area monitoring shall be conducted to ensure unprotected personnel adjacent to the lead control area are not exposed at or above 30 pg/m³ of air. If 30 pg/m³ of air is reached or exceeded, the Contractor will be advised to stop work, and correct the conditions(s) causing the increased levels. GOSR will determine if condition(s) require any further change in work methods. Removal work shall resume only after approval is given by GOSR. For outdoor operations, at least one sample on each shift shall be taken on the downwind side of the lead control area.

3. Lead-Based Paint Removal

a. Provide methodology for removing LBP/LCP in the work plan. Remove paint within the areas designated on the drawings to completely expose the substrate. Take whatever precautions necessary to minimize damage to the underlying substrate.

b. Avoid flash rusting or deterioration of the substrate. Coordinate surface preparations as required by GOSR.

c. Provide methodology for LBP/LCP removal processes to minimize contamination of work areas outside the control area with lead-contaminated dust or other lead-contaminated debris/waste and to ensure that unprotected personnel are not exposed to hazardous concentrations of lead. Describe this LBP/LCP removal process in the LBP/LCP RP.

d. Indoor Lead Paint Removal: Perform manual or mechanical or thermal or chemical, as directed, paint removal in lead control areas using enclosures, barriers, or containments and powered locally exhausted paint removal tools. Collect residue and/or debris for disposal in accordance with federal, State, and local requirements.

e. Outdoor Lead Paint Removal: Perform outdoor removal as indicated in federal, State, and local regulations and in the LBP/LCP RP. The worksite preparation (barriers or containments) shall be job dependent and presented in the LBP/LCP RP.

f. Component Removal (i.e., windows, doors): Cover the ground surface beneath components with polyethylene sheeting. The ground cover, paint chips that have fallen onto it, and personal protective equipment shall leave the site as hazardous waste and shall not be co-mingled with components.

g. Sampling After Paint Removal: After the visual inspection, GOSR will conduct soil sampling if bare soil is present during external removal operations and collect area air samples inside and
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outside the lead control area to determine the airborne levels of lead inside and outside the work area. GOSR will collect wipe samples according to the HUD protocol contained in HUD Guidelines to determine the lead content of settled dust and dirt in micrograms per square foot (µg/ft²) of surface area and parts per million (ppm) or micrograms per gram (µg/g) for soil. Components shall be sampled for toxicity characteristic leaching procedure (TCLP) requirements prior to disposal.

4. Cleanup and Disposal
   a. Cleanup: Maintain surfaces of the lead control area free of accumulations of paint chips and dust. Restrict the spread of dust and debris; keep waste from being distributed over the work area. Do not dry sweep or use compressed air to clean up the area. At the end of each shift and when the paint removal operation has been completed, clean the area of visible lead paint contamination and within two feet of the work area by vacuuming with a HEPA filtered vacuum cleaner, wet mopping the area and wet wiping the area as indicated by the PS. Re-clean areas showing dust or residual paint chips or debris. After visible dust, chips, and debris are removed, wet wipe and HEPA vacuum all surfaces in the work area. Collect all paint chips and debris and, without dispersing any of it, seal this material in a heavy-duty bag. Remove protective sheeting. Mist the sheeting before folding it, fold the dirty side inward, and either tape shut or seal in heavy-duty bags. Sheetings used to isolate contaminated rooms from non-contaminated rooms must remain in place until after the cleaning and removal of other sheeting. Dispose of the sheeting as waste. If adjacent areas become contaminated at any time during the work, clean, visually inspect, and then wipe sample all contaminated areas. The PS shall then certify in writing that the area has been cleaned of lead contamination before restarting work.
   b. Clearance Certification
      1) The Contractor shall document in writing and provide analytical documentation to certify that the employee exposure to an airborne concentration of lead were below the required action level, respiratory protection used for the employees was adequate; the work procedures were performed in accordance with 29 CFR 1926.62 and 40 CFR 745; and that there were no visible accumulations of material and dust containing lead left in the work site. Do not remove the lead control area or roped off boundary and warning signs prior to GOSR’s acknowledgement of the third-party sampling results, if required, and upon receipt of the Contractor certification.
      2) A certified renovator must perform a visual inspection to determine whether dust, debris, or residue is still present. If dust, debris, or residue is present, these conditions must be removed by re-cleaning and another visual inspection must be performed.
      3) After a successful visual inspection, the certified renovator must verify that each windowsill in the work area has been adequately cleaned. The windowsill shall be wiped with a wet disposable cleaning cloth that is damp to the touch. If the cloth matches or is lighter than the cleaning verification card, the windowsill has been adequately cleaned. If the cloth does not match and is darker than the cleaning verification card, re-clean the windowsill, then either use a new cloth or fold the used cloth in such a way that an unused surface is exposed, and wipe the surface again. If the cloth matches or is lighter than the cleaning verification card, that windowsill has been adequately cleaned. If the cloth does not match and is darker than the cleaning verification card, wait for 1 hour or until the surface has dried completely, whichever is longer. After waiting for the windowsill to dry, wipe the windowsill with a dry disposable cleaning cloth. After this wipe, the windowsill has been adequately cleaned.
      4) Wipe uncarpeted floors and countertops within the work area with a wet disposable cleaning cloth. Floors must be wiped using an application device with a long handle and a head to which the cloth is attached. The cloth must remain damp at all times while it is being used to wipe the surface for post-renovation cleaning verification. If the surface
within the work area is greater than 40 square feet, the surface within the work area must be divided into roughly equal sections that are each less than 40 square feet. Wipe each such section separately with a new wet disposable cleaning cloth. If the cloth used to wipe each section of the surface within the work area matches the cleaning verification card, the surface has been adequately cleaned. If the cloth used to wipe a particular surface section does not match the cleaning verification card, re-clean that section of the surface, then use a new wet disposable cleaning cloth to wipe that section again. If the cloth matches the cleaning verification card, that section of the surface has been adequately cleaned. If the cloth used to wipe a particular surface section does not match the cleaning verification card after the surface has been re-cleaned, wait for 1 hour or until the entire surface within the work area has dried completely, whichever is longer. After waiting for the entire surface within the work area to dry, wipe each section of the surface that has not yet achieved post-renovation cleaning verification with a dry disposable cleaning cloth. After this wipe, that section of the surface has been adequately cleaned.

5) The GOSR Third-Party Consultant shall certify surface wipe sample results collected inside and outside the work area are less than 10 mg/ft² on uncarpeted floors, less than 50 pg/ft² on interior window sills and less than 100 pg/ft² on window troughs or not significantly greater than the initial surface loading determined prior to work, as directed.

6) When the work area passes the post-renovation cleaning verification and satisfactory third-party clearance air sample results, remove the warning signs.

7) For exterior paint removal work, a certified renovator must perform a visual inspection to determine whether dust, debris or residue is still present on surfaces in and below the work area, including windowsills and the ground. If dust, debris or residue is present, these conditions must be eliminated and another visual inspection must be performed. When the area passes the visual inspection, remove the warning signs. The GOSR Third-Party Consultant will provide soil samples taken at the exterior of the work site to be used to determine if soil lead levels have increased at a statistically significant level (significant at the 95% confidence limit) from the soil lead levels prior to the work. If soil lead levels do show a statistically significant increase above any applicable Federal or State standard for lead in soil, the soil shall be remediated back to the pre-work level.


d. Disposal

1) Waste from renovation activities must be contained to prevent releases of dust and debris before the waste is removed from the work area for storage or disposal. If a chute is used to remove waste from the work area, it must be covered. At the conclusion of each work day and at the conclusion of the renovation, waste that has been collected from renovation activities must be stored under containment, in an enclosure, or behind a barrier that prevents release of dust and debris out of the work area and prevents access to dust and debris. The waste must be contained to prevent release of dust and debris during transport.

2) Collect lead-contaminated waste, scrap, debris, bags, containers, equipment, and lead-contaminated clothing, which may produce airborne concentrations of lead particles. Label the containers in accordance with 29 CFR 1926.62 and 40 CFR 261. Dispose of lead-contaminated waste material at an EPA or State approved hazardous waste treatment, storage, or disposal facility off Owner's property.

3) Store waste materials in US Department of Transportation (DOT) (49 CFR 178) approved 55-gallon drums. Properly label each drum to identify the type of waste (49 CFR 172) and the date the drum was filled. GOSR or an authorized representative will assign an area for interim storage of waste-containing drums. Do not store hazardous waste drums in interim storage longer than 90 calendar days from the date affixed to each drum.
SECTION 028300 – REMOVAL AND DISPOSAL OF LEAD-CONTAINING PAINT

4) Handle, store, transport, and dispose lead or lead-contaminated waste in accordance with 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, and 40 CFR 265. The Contractor shall provide documentation the transporter is authorized to transport the waste, authorized to deliver the waste to the treatment, storage, or disposal facility and the treatment, storage, or disposal facility is authorized to accept the waste. Comply with land disposal restriction notification requirements as required by 40 CFR 268.

5) All waste containers shall be lined with two layers of polyethylene sheeting prior to disposal of materials.

6) All material, whether hazardous or non-hazardous shall be disposed of in accordance with laws and provisions and federal, State, or local regulations. Ensure waste is properly characterized. The result of each waste characterization (TCLP for RCRA materials) will dictate disposal requirements.

7) The waste profile, LDR form, waste transporter permit must be reviewed and approved by the Third-Party Consultant prior to any hazardous waste leaving the site.

8) The DOT-trained Third-Party Consultant must be on-site for all hazardous waste shipment removals and will be responsible for inspection of the waste shipment and signoff on the hazardous waste manifest on behalf of the owner and GOSR to allow the hazardous waste shipment to leave the site.

5. Disposal Documentation: Submit written evidence the hazardous waste treatment, storage, or disposal facility is approved for lead disposal by the EPA and State or local regulatory agencies. Submit one copy of the completed manifest, signed and dated by the initial transporter in accordance with 40 CFR 262.

6. Payment for Hazardous Waste: Payment for disposal of hazardous waste will not be made until a signed copy of the manifest from the treatment or disposal facility certifying the amount of lead-containing materials delivered is returned and a copy is furnished to the Owner.

END OF SECTION 02 83 00
SECTION 028300 – REMOVAL AND DISPOSAL OF LEAD-CONTAINING PAINT

APPENDIX A

WASTE SHIPMENT RECORD LOG
# WASTE SHIPMENT RECORD LOG

<table>
<thead>
<tr>
<th>Load No.</th>
<th>Hauler</th>
<th>NYSDEC #</th>
<th>License Plate No.</th>
<th>Size of Container</th>
<th>Disposal Facility</th>
<th>Departed from Site</th>
<th>Rec’d at Disposal Site</th>
<th>Shipment Record Returned</th>
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</table>

**DATES (Chain of Events)**

**COMMENTS:**
NY Rising – Governor’s Office of Storm Recovery
GOSR Work Order Number: NTF-1-DES
Edgewater Park Volunteer Fire Department — Storm Hardening and Abatement

SECTION 028300 - REMOVAL AND DISPOSAL OF LEAD-CONTAINING PAINT

APPENDIX B

CONTRACTOR’S ACKNOWLEDGEMENT STATEMENT
CONTRACTOR'S ACKNOWLEDGEMENT STATEMENT

Re: Removal of Lead Containing Paint

(Project Title)

(Project Location)

(GOSR Project Number)

In consideration of the following individuals' employment in connection with the abatement, handling, and disposal of lead containing materials at the referenced project, I hereby certify that the employees: a) have received the medical examinations required by OSHA 29 CFR 1926.62; b) have been fit tested specifically for respirators used on the Project; and c) have received training as required by OSHA 29 CFR 1926.62 in the proper handling of lead containing materials-, including the health implications and risks involved, as well as the use and limitations of the respiratory equipment to be used.

Employee Name

US EPA Certificate Number

Supervisor Signature

Printed Name

Title

(Notary block here)

Page ____ of ____
NY Rising – Governor’s Office of Storm Recovery
GOSR Work Order Number: NTF-1-DES
Edgewater Park Volunteer Fire Department — Storm Hardening and Abatement

SECTION 028300 - REMOVAL AND DISPOSAL OF LEAD-CONTAINING PAINT

APPENDIX C

EPA NOTIFICATION OF LEAD-BASED PAINT ABATEMENT ACTIVITIES
SECTION 02 86 00
IDENTIFICATION AND DISPOSAL OF HAZARDOUS WASTE

PART 1 - GENERAL

A. Description Of Work
1. This specification covers the identification and disposal of hazardous waste, and related hazardous materials. Products shall be as follows or as directed by the Owner and or their representative. Installation procedures shall be in accordance with the product manufacturer’s recommendations. Demolition and removal of materials shall be as required to support the work.
2. The work involves the removal of the following items:

<table>
<thead>
<tr>
<th>Location</th>
<th>Hazardous Waste</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Floor Meeting Room</td>
<td>Presumed PCB Containing Ballasts</td>
<td>20 Ballasts</td>
</tr>
<tr>
<td>1st Floor Back Room</td>
<td>Presumed PCB Containing Ballasts</td>
<td>4 Ballasts</td>
</tr>
<tr>
<td>1st Floor Tower Storage</td>
<td>Presumed PCB Containing Ballasts</td>
<td>4 Ballasts</td>
</tr>
<tr>
<td>2nd Floor Kitchen</td>
<td>Presumed PCB Containing Ballasts</td>
<td>2 Ballasts</td>
</tr>
<tr>
<td>2nd Floor EPOC/Tower</td>
<td>Presumed PCB Containing Ballasts</td>
<td>4 Ballasts</td>
</tr>
</tbody>
</table>

3. Special Wastes:
   b. PCB Bulk Waste and non-liquid PCB materials (NLPCB): Window caulk and other caulk may contain NLPCB; if so, when disposed these materials are EPA-regulated PCB Bulk Waste under TSCA, and are NYS hazardous waste. PCB light ballasts are also to be disposed of as NYS Hazardous Waste. PCB Caulk is governed under GOSR Specification 02084.

B. Definition
1. Hazardous waste shall be any materials to be disposed that possess at least one of four characteristics, ignitability, corrosivity, reactivity or toxicity, as defined and regulated by the Resource Conservation and Recovery Act (RCRA) and applicable state and federal regulations, or a material specifically identified as hazardous waste by applicable Federal or State lists, in 40 CFR 261 or 6 NYCRR 371.

028600-1
SECTION 028600 – IDENTIFICATION AND DISPOSAL OF HAZARDOUS WASTE

2. A Conditionally Exempt Small Quantity Generator (CESQG) of hazardous waste shall be a waste handler who generates no more than 100 kilograms per month of listed and/or characteristic hazardous waste, generates no more than 1 kilogram of acute hazardous waste in any calendar month, and stores no more than 1000 kilograms of listed and/or characteristic hazardous waste or more than 1 kilogram of acutely hazardous waste.

3. A Small Quantity Generator (SQG) of hazardous waste shall be a waste handler who generates no more than 1000 kilograms per month of listed and/or characteristic hazardous waste.
waste, generates no more than 1 kilogram of acute hazardous waste per month, and stores
no more than 6000 kilograms of listed and/or characteristic hazardous waste or more than
1 kilogram of acutely hazardous waste.

4. Large Quantity Generator (LQG) of hazardous waste shall be a waste handler who
generates more than 1000 kilograms per month of listed and/or characteristic hazardous
waste, generates more than 1 kilogram of acute hazardous waste per month, or stores more
than 6000 kilograms of hazardous waste or 1 kilogram of acutely hazardous waste.

5. The Owner's Consultant: The Owner shall provide a third party consultant to provide pre-
work assessments, project monitoring assessments for the construction procedures for the
work area and surrounding areas and final clearance assessments. The Contractor shall be
responsible for the worker protection requirements.

C. Submittals

1. Before start of work: At the pre-construction meeting, the Contractor shall submit the
following to the Owner's Representative for review:
   a. Copy of State or local license for hazardous waste hauler.
   b. Certificate of at least one on-site supervisor which has satisfactorily completed the
      OSHA 40 hour Health and Safety course for handling hazardous waste and spills.*
   c. Certificates of workers, which have successfully completed the OSHA 40-Hour
      Health and Safety Course for Hazardous Waste and spills.*
   d. List of the employees scheduled to perform this work.
   e. Schedule of start and finish times and dates for this work.
   f. The name, address and EPA ID No. of the disposal facility where these waste
      materials are to be received. Include contact person, a copy of the facility permit and
      telephone number.
   g. The facility permit must identify the waste material(s) to be received, and must be
      accompanied by a statement that the facility has the capacity and authority to accept
      the waste. Land Disposal Restriction (LDR) forms must also be provided.
   h. Material Safety Data Sheet (MSDS) for all materials to be removed.
   i. If the Contractor introduces any chemical into the work environment, a MSDS for
      that chemical must be presented to the Owner's Representative prior to use.
   j. Transporter must have notified the EPA and/or other appropriate local government
      agency in advance of its intentions to transport hazardous materials and, if
      applicable, receive an identification number. The transporter shall submit a copy of
      the NYS DEC Part 364 Permit, for review.
   k. Health and Safety/Contingency Plan for material handling and emergency
      procedures.
   l. Certification for medical examinations.
   m. Respiratory protection program.
   n. Project Plan: Provide a description of the methods, procedures and materials to be
      used in performing the work and handling all hazardous wastes. Also provide a
      schedule identifying specific work areas and duration. The schedules will be utilized
      to schedule facility and third party consultant requirements.
   o. Waste Sampling Plan: Provide a sampling plan that describes all samples to be taken
      and the parameters to be analyzed, as well as the laboratory providing the services;
      or provide another basis for identification of the waste, such as an MSDS.
SECTION 028600 – IDENTIFICATION AND DISPOSAL OF HAZARDOUS WASTE

2. Do not start work until submittals are returned with the Owner’s Representative stamp indicating that the submittal is returned for unrestricted use.

D. Regulatory Requirements
1. All activities related to the work shall be conducted in compliance with all applicable laws, regulations, and requirements which may include, but not be limited to, the United States Environmental Protection Agency (US EPA), United States Department of Transportation (US DOT), Resource Conservation and Recovery Act (RCRA), Toxic Substances Control Act (TSCA), Occupational Safety and Health Administration (OSHA), New York State Department of Environmental Conservation (NYS DEC), New York City Department of Environmental Protection (NYC DEP), and New York City Fire Department.
2. The Contractor is required to secure and maintain all required regulatory permits necessary to perform all aspects of the work.
3. The Contractor shall containerize and store waste in accordance with all applicable regulations. All containers are to be appropriately marked/labeled.

PART 2 PRODUCTS

A. Materials
1. Drums: Recovery or salvage drums acceptable for disposal of hazardous waste. Prior approval of drums is required. Drums or containers must meet the required OSHA, EPA (40 CFR Parts 260-264 and 300), and DOT Regulations (49 CFR Parts 171-178). Use of damaged containers shall not be allowed.
2. Labels: As required by the EPA and OSHA for handling, transportation, and disposal of hazardous waste.
3. Absorbent Material: Clay, soil or any commercially available absorbent used for the purpose of absorbing hazardous or potentially hazardous materials.

PART 3 EXECUTION

A. All waste shall be stored, handled, transported and disposed of in accordance with all federal, state and local guidelines and regulations. The Contractor is to obtain all permits, licenses, etc., which are necessary for the storing, transporting and disposing of hazardous waste. The Contractor shall develop all applicable manifests, Profile Sheets, Land Ban Forms and any other documentation and co-ordinate with the Owner regarding proper signatures. The Contractor may be required to notify the EPA of the hazardous waste activities, and obtain an EPA identification number specifically for the project, if one is not available.

B. The Contractor shall identify and classify the hazardous waste generated through the performance of the work as per the governing regulations, and in accordance with the Waste Sampling Plan submittal from Section 1.1 above. The Contractor shall conduct the required sampling and chemical analysis for handling, storing, transporting and disposing of the hazardous waste.
C. The Contractor is responsible for securing appropriate treatment or disposal for the waste streams at a permitted TSDF, in compliance with all requirements, and for obtaining a copy of the waste manifest as executed by the TSDF. If the manifest is not returned within the required time, the contractor shall notify the Owner and the NYS DEC, and initiate an investigation as required.

D. Transporters shall maintain waste manifest and shipment record forms. All transporters are required to obtain and maintain NYS DEC Part 364 Waste Transporter permit and, if applicable, a NYC Fire Department permit for transporting flammables. The Part 364 Permit shall have the license plate number of the vehicle, the expiration date of the permit, the type of waste the hauler can take and the treatment, storage and disposal (TSD) facility to which the hauler can take the waste. The transporter must also have all applicable, current waste transportation permits for states where proposed disposal facility is located.

E. The Contractor shall supply all required placard and labeling, and shall have an appropriately trained individual to prepare and sign the hazardous waste manifest, as the DOT shipper.

F. The Contractor shall furnish all certified copies of manifests (interim storage and final disposal) within regulatory requirements. Within 30 days from the acceptance of the waste by the disposal facility, the Contractor shall provide the Owner with Certificate of Disposal documents, as a requirement for final payment.

G. Unless directed otherwise, the Contractor shall file the annual report and fee report if applicable for the hazardous waste shipped, and provide closure notification to EPA and DEC immediately upon completion of the work.

*HAZWOPER Training is not required if the waste is PCB Bulk waste alone, but OSHA HAZCOM and TSCA training are still required

END OF SECTION 028600
PART 1 GENERAL

A. Description Of Work
1. This specification covers the removal and disposal of Universal waste, including fluorescent lamps, high-intensity discharge (HID) lamps, mercury thermostats and switches, batteries and pesticides (not PCB lighting ballasts). Removed or replaced mercury thermostats shall be recycled as per current NYS DEC regulations, instead of disposal as Universal Waste. Demolition and removal of materials shall be as required to support the work.
2. The work involves the removal of the following items:

<table>
<thead>
<tr>
<th>Location</th>
<th>Material</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Floor Meeting Room</td>
<td>Fluorescent Bulbs in Fixtures</td>
<td>40 Bulbs</td>
</tr>
<tr>
<td>1st Floor Back Room</td>
<td>Fluorescent Bulbs in Fixtures</td>
<td>8 Bulbs</td>
</tr>
<tr>
<td>1st Floor Tower Storage</td>
<td>Fluorescent Bulbs in Fixtures</td>
<td>8 Bulbs</td>
</tr>
<tr>
<td>2nd Floor Kitchen</td>
<td>Fluorescent Bulbs in Fixtures</td>
<td>2 Bulbs</td>
</tr>
<tr>
<td>2nd Floor EPOC/Tower</td>
<td>Fluorescent Bulbs in Fixtures</td>
<td>4 Bulbs</td>
</tr>
<tr>
<td>3rd Floor EPOC (301)</td>
<td>Mercury Switch Thermostat</td>
<td>1 Thermostat</td>
</tr>
</tbody>
</table>

B. Submittals
1. Before Start of Work: Submit the following to the Owner's Representative for review. Do not start work until these submittals are returned with Owner's Representative's approval.
   a. Copy of State or local license for hazardous waste hauler;
   b. Certification of at least one on-site supervisor which has satisfactorily completed the OSHA 40 Hour Health and Safety Course for Handling Hazardous Materials;
   c. Certificates of workers which have successfully completed at least the OSHA 40-Hour Health and Safety Course for Hazardous Materials;
   d. Certificates of workers which have successfully completed the required employee training for universal waste or appropriate type of training to the type of wastes being managed;
   e. Schedule of start and finish times and dates for this work;
   f. Name and address of the universal waste handler or a destination facility where the waste materials is to be treated, deposited or recycled in accordance with all regulatory requirements (include contact person and telephone numbers), if the universal waste meets the definition of hazardous waste, the name and address of the hazardous waste treatment, storage and disposal (TSD) facility, the name and address of the mercury thermostat recycling collection site;
   g. Material Safety Data Sheets for all materials requiring removal;
   h. If Contractor introduces any chemical into the work environmental, a MSDS for that chemical is required before use;
   i. Contingency Plan for handling emergency spills or leaks;
   j. Provide a copy of the NYS DEC Part 364 Waste Transporter permit for Universal Waste Transporters that transport more than 500 pounds of universal waste in a single shipment since they must be a permitted waste transporter;
k. Large Quantity Handlers of universal waste must provide documentation of notification to the EPA and/or the appropriate local government agency in advance of its intentions to transport the waste and receive from the facility or provide an EPA identification number prior to exceeding 5,000 kilograms of waste on-site;

l. Provide a record of all universal waste shipments received and sent offsite from the project.

C. Definitions

1. Large Quantity Handler (LQH) of Universal Waste shall be a waste handler who accumulates 5,000 kilograms or more of universal waste (batteries, pesticides, thermostats, or lamps, calculated collectively) at any time. This designation as a large quantity handler of universal waste is retained through the end of the calendar year in which 5,000 kilograms (11,000 pounds) or more total of universal waste is accumulated. The LQH shall notify the EPA, acquire or co-ordinate with a facility regarding an EPA identification number, and provide records for each shipment. The LQH shall ensure all employees are thoroughly familiar with proper waste handling and emergency procedures, relative to their responsibilities during normal facility operations and emergencies.

2. Small Quantity Handler of Universal Waste (SQH) shall be a waste handler who does not accumulate 5,000 kilograms (11,000 pounds) or more of total universal waste (batteries, pesticides, thermostats, or lamps, calculated collectively) at any time.

3. Destination Facility shall be a facility that legitimately and can legally accept universal waste from offsite so that the universal waste can be treated, disposed, or recycled in accordance with the regulatory requirements.

4. Universal Waste Transporter shall be anyone who transports universal waste. In New York, universal waste transporters that transport greater than 500 pounds of universal waste in a single shipment must be a permitted hazardous waste transporter pursuant to Federal and State regulations. Proper notification with the receiving handler agreeing to receive the shipment is required by the Universal Waste Transporter.

5. Universal Waste consists of the following discarded materials, as identified in 6 NYCRR 374-3: Fluorescent light bulbs high-intensity discharge (HID) lamps, mercury thermostats and switches, batteries, and pesticides. Removed or replaced mercury thermostats must be delivered to a designated mercury thermostat collection site as per current NYC DEC regulations. Disposal of mercury thermostats in a solid waste management facility is prohibited. PCB ballasts/capacitors from light fixtures shall not be treated as universal waste, they shall be handled and disposed of as hazardous waste. See the Hazardous Waste Disposal Specification for these wastes.

PART 2 PRODUCTS

A. Materials

1. Polyethylene Sheet: A single polyethylene film in the largest sheet size possible to minimize seams, 6.0 mil thick, clear, frosted, or black.

2. Duct Tape: Provide duct tape in 3" widths, witty an adhesive which is formulated to stick aggressively to sheet polyethylene.

3. Spray Cement: Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.


028700-2
SECTION 028700 - CONCRETE UNIT MASONRY

SECTION 02 87 00 - REMOVAL AND DISPOSAL OF UNIVERSAL WASTE AND FLUORESCENT LAMPS

5. Labels: As required by the EPA and OSHA for handling, transportation, and disposal of hazardous waste.

6. Drums: Recovery or salvage drums acceptable for disposal of hazardous waste. Prior approval of drums is required. Drums or containers must meet the required OSHA EPA (40 CFR Parts 264-265 and 300), and DOT regulations (49 CFR Parts 171-178). Use of damaged drums will not be allowed.

PART 3 EXECUTION

A. Universal Waste

1. Employee training shall ensure that all employees are thoroughly familiar with proper waste handling and emergency procedures, relative to their responsibilities during normal operations and emergencies and to the type of waste they are handling.

2. Mercury thermostats shall be segregated from other Universal Wastes to allow for required recycling.

3. Once the properly labeled containers holding the universal waste have been filled and sealed, they shall be stored in designated accumulation areas as agreed upon by the Owners Representative and Contractor. They shall not be allowed to store in transportation vehicles, or onsite for more than one year from when the waste has been generated.

4. Documentation when a universal waste in storage was first accumulated shall be provided. This is to be done by dating and labeling the waste with the date of the earliest accumulation that can document the length of time the universal waste has been accumulated.

5. Maintenance of an inventory system on-site that identifies the earliest date that any universal waste in a group of universal waste items or a group of containers of universal waste became a waste was received.

6. Any waste developed from the work that exhibits one or more characteristics of hazardous waste, that are not specifically identified by EPA and DEC as Universal Waste, must be handled accordingly and not as a universal waste. See the Hazardous Waste Disposal Specification for those wastes.

B. Off-Site Shipment of Universal Waste

1. Off-Site shipments shall meet the requirements for offsite shipments and is prohibited from sending or taking universal waste to a place other than a designated universal waste handler or a universal waste destination facility.

2. LQH's of universal waste must notify EPA in writing and develop an EPA identification number or co-ordinate with the facility regarding use of their EPA identification number, prior to exceeding 5,000 kilograms of universal waste onsite.

3. SQH's do not need to notify EPA, receive an EPA identification number or keep records of shipments of universal waste.

4. LQH's must keep a record of all universal waste shipments received or sent offsite, and must retain those records for at least three years from the date of receipt or shipment. Records may include invoices, manifests, logs, bills or lading, or other shipping documents.

5. The Contractor shall provide certified copies of all receipts obtained from designated mercury thermostat recycling collection sites within 30 days of thermostat acceptance by collection site.

6. The Contractor shall furnish all certified copies of manifests (interim storage and final disposal) within regulatory requirements. Within 30 days from acceptance of the waste by
the disposal facility, the Contractor shall provide the Owner with Certificate of Disposal documents, as a requirement for final payment.

END OF SECTION 02 87 00
PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:
   1. Footings.
   2. Foundation walls.
   3. Slabs-on-grade.

1.03 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.04 ACTION SUBMITTALS

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

B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
   1. Indicate amounts of mixing water to be withheld for later addition at Project site.
   2. Submit mix design mixtures for each type of concrete to be used on the Project at least 30 calendar days prior to the first scheduled concrete pour. The Contractor's testing laboratory shall develop concrete mix designs and test all materials and mixes for conformance with ACI 301 and these specifications. The costs associated with development of the design mix and testing of samples shall be included in the bid price.
   3. Submit the following:
      a. Name, address, and telephone number of Contractor's laboratory.
      b. Mix proportions.
      c. Source of cement, type, brand, and certified copies of mill reports, including physical and chemical analysis.
      d. Sources of fine aggregates and results of test made in accordance with ASTM C33 and ASTM C40.
      e. Source of coarse aggregates and results of tests made in accordance with ASTM C33.
      f. Catalog cuts of all admixtures.
      g. Furnish test results of slump, air entrainment and water-cement ratio for each mix design.
      h. For each mix proposed, make and cure four (4) standard 6 inch concrete test specimens to the laboratory in accordance with ASTM C192. Furnish compression test results made in accordance with ASTM C39. Break two (2) cylinders at seven (7) days and two (2) at 28 days.
      i. If the concrete is intended to be pumped, design mix accordingly and submit certification that it has been tested for pumping.
j. If adopted mix fails to produce concrete meeting the requirements for strength and placibility, the Architect may order additional cement or adjustments to mix proportions at no extra cost to the Owner.

C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, spacing, locations, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement including steel bars and wire fabric.

D. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer licensed in the state where the project is located; detailing fabrication, assembly, and support of formwork. Shop drawings shall bear the signature and seal of the same licensed Professional Engineer.
   1. Shoring and Reshoring: Indicate proposed schedule and sequence of stripping formwork, shoring removal, and reshoring installation and removal
   2. Shop drawings shall indicate formwork dimensioning, materials and arrangement of joints and ties.
   3. Manufacturer's instructions: Indicate installation procedure and interface required with adjacent work

E. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
   1. Location of construction joints is subject to approval of the Architect, if not shown on the drawings.

F. Samples: For waterstops and vapor retarder.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and testing agency.

B. Welding certificates.

C. Material Certificates: For each of the following, provided by manufacturers:
   1. Cementitious materials.
   2. Admixtures.
   3. Form materials and form-release agents.
   4. Steel reinforcement and accessories.
   5. Curing compounds.
   7. Adhesives and Vapor retarders.
   8. Semi rigid joint filler.

D. Floor surface flatness and levelness measurements indicating compliance with specified tolerances.

E. Field quality-control reports.

F. Minutes of preinstallation conference.
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G. Furnish transit-mix delivery slips to Owner's Representative.

1.06 QUALITY ASSURANCE

A. Comply with Referenced Standards specified in Division 01 Section "References" in addition to ACI 301.

B. Perform testing per the "FIELD QUALITY CONRTOL" Article of Part 3 listed in this specification.

C. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

D. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94 requirements for production facilities and equipment.
   1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

E. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
   1. The contractor shall provide an adequately sized, insulated curing box to house concrete cylinders at the discretion of the Architect, for the 24-hour period between concrete pour and sample collection pick-up by the Testing Laboratory. As directed by the Architect, the contractor shall cure additional cylinders in the same fashion as the in-place concrete.
   2. Curing box shall be located away from the main construction area and shall be blocked up off the ground.
   3. A log sheet shall be provided in a waterproof sheet protector to log in the placement and removal of the concrete test samples by the testing laboratory.
   4. Minimum information to be logged for each pour date shall include: date of pour, date of pick-up, weather conditions at the time of pour, testing

F. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4, "Structural Welding Code - Reinforcing Steel."

G. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
   1. ACI 301, "Specifications for Structural Concrete", Sections 1 through 5.
   2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials".
   3. ACI 304 - "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete".

H. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

I. Preinstallation Conference: Conduct conference at Project site.
   1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
      a. Contractor's superintendent.
      b. Independent testing agency responsible for concrete design mixtures.
      c. Ready-mix concrete manufacturer.
d. Concrete subcontractor.
2. Review special inspection and testing and inspecting agency procedures for field quality control, cold- and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, and joint-filler strips, semi rigid joint fillers, forms and form removal limitations, shoring and reshoring procedures, vapor-retarder installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, floor and slab flatness and levelness measurement, concrete repair procedures, and concrete protection.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.

B. Store cement off the ground in a dry, weatherproof, adequately ventilated structure with provisions to prevent the absorption of water.

C. Transport dry concrete batches from the central plant to the site in approved truck mixers conforming to the requirements of the Truck Mixer Manufacturer's Agitating Standards. Each truck shall contain a plate stating the capacity, drum speeds and be provided with a revolution counter.

D. Packaged material shall be delivered and stored in the original packages until ready for use. Packages or materials showing evidence of water or other damage shall be rejected.

E. Protect all materials from freezing.

1.08 COORDINATION

A. The Contractor shall provide at least five (5) working days advance notice prior to formwork closure to the Architect.

B. Coordinate work of other Sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors, and other inserts.

C. Notify Architect a minimum of three (3) working days prior to commencement concrete pours.

1.09 REGULATORY REQUIREMENTS

A. Conform to ACI 304R and all applicable codes for placement of concrete and related work.

1.10 ENVIRONMENTAL REQUIREMENTS

A. Do not place concrete when the ambient temperature is below 40 deg. F. or when the concrete temperature exceeds 85 deg. F. Under certain circumstances, the Engineer may approve the placement of concrete under the above conditions, provided that the procedures of ACI 305R and ACI 306R are strictly adhered to.

B. Do not place concrete when the conditions may adversely affect the placing, curing or finishing of concrete, or its strength.

C. Comply with the requirements contained in Section 016500 - PRODUCT DELIVERY, STORAGE AND HANDLING.
SECTION 033000 – CAST-IN PLACE CONCRETE

PART 2 - PRODUCTS

2.01 FORM-FACING MATERIALS

A. 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. Steel forms: Minimum 16 gage thick, stiffened to support weight of concrete with minimum deflection.
   3. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and
      as follows:
      a. Douglas Fir Species, solid one side grade and sound

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum unless indicated otherwise on the drawings.

D. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal. Patterns and sizes as shown on the drawings.

E. Form-Release Agent: Commercially formulated, colorless, water based, non-toxic, V.O.C. compliant, environmentally safe material which will not stain concrete, absorb moisture or impair natural bonding or color characteristics of coating intended for use on concrete; manufactured by DAYTON SUPERIOR or equal. Agent shall not be detrimental to the environment.

F. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
   1. Furnish units that will leave no corrodbile metal closer than 1 inch to the plane of exposed concrete surface.
   2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.
   3. For Concrete Tanks: Furnish snap-ties with 1 inch plastic cone and waterseal washer.

2.02 STEEL REINFORCEMENT

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 60 percent.

B. Reinforcing Bars: ASTM A 615, Grade 60, deformed.

C. Galvanized Reinforcing Bars: ASTM A 615, Grade 60; ASTM A 706, deformed bars; ASTM A767/A767M, Class II zinc coated after fabrication and bending.

D. Steel Bar Mats: ASTM A184/A184M, fabricated from ASTM A615/A615M, Grade 60; ASTM A706/A706M, deformed bars, assembled with clips.

E. Deformed-Steel Wire: ASTM A 496.
F. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.

2.03 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A615/A615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.
2. Provide load bearing pad on bottom to prevent vapor barrier puncture.

2.04 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
   1. Portland Cement: ASTM C150/C150M, Type IA, gray. Supplement with the following:
      a. Fly Ash: ASTM C 618, Class F or C.
      b. Ground Granulated Blast-Furnace Slag: ASTM C989/C989M, Grade 100 or 120.
   3. Normal-Weight Aggregates: ASTM C33/C33M, No. 57 or 67 crushed stone coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.
      b. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

2.05 ADMIXTURES


B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
   1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
   2. Retarding Admixture: ASTM C494/C494M, Type B.
   3. Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type D.
   4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
   5. High-Range, Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type G.
   6. Plasticizing and Retarding Admixture: ASTM C 1017, Type II.

2.06 VAPOR RETARDERS

A. Sheet Vapor Retarder: ASTM E 1745, Class C or polyethylene sheet, ASTM D4397 not less than 10 mils thick. Include manufacturer's recommended adhesive or pressure-sensitive tape.
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1. **Products:** Subject to compliance with requirements, provide the following:
   a. Grace Construction Products, W. R. Grace & Co.; Florprufe 120
   b. Insulation Solutions, Inc.; Viper VaporCheck 10.
   e. Stego Industries, LLC; Stego Wrap 10 mil Class A.
   f. Or approved equal.

B. **Fine-Graded Granular Material:** Clean mixture of crushed stone, crushed gravel, and manufactured or natural sand; AASTM D448, Size 10, with 100 percent passing a 3/8-inch sieve, 10 to 30 percent passing a No. 100 sieve, and at least 5 percent passing No. 200 sieve; complying with deleterious substance limits of ASTM C33/C33M for fine aggregates.

2.07 FLOOR AND SLAB TREATMENTS

A. **Slip-Resistive Emery Aggregate Finish:** Factory-graded, packaged, rustproof, non-glazing, abrasive, crushed emery aggregate containing not less than 50 percent aluminum oxide and not less than 20 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials with 100 percent passing No. 4 sieve.

1. **Products:** Subject to compliance with requirements, provide one of the following:
   a. Dayton Superior Corporation; Emery Tuff Non-Slip
   b. Lambert Corporation; EMAG-20
   c. L&M Construction Chemicals, Inc.; Grip It
   d. Metalcrete Industries; Metco Anti-Skid Aggregate

2.08 CURING MATERIALS

A. **Absorptive Cover:** AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 8 oz. / sq. yd. when dry.

B. **Moisture-Retaining Cover:** ASTM C171, polyethylene film or white burlap-polyethylene sheet weighing approximately 8 oz. / sq. yd. bonded to prevent separation during use.

C. **Membrane curing compound:** Moisture Retention complying with ASTM C309. Products: EUCOCURE VOX by Euclid Chemical Company or equal.

D. **Water:** Potable.

E. **Clear, Waterborne, Membrane-Forming Curing Compound:** ASTM C309, Type 1, Class B, dissipating.

1. **Products:** Eucocure VOX as manufactured by Euclid Chemical Company or approved equal.

2.09 RELATED MATERIALS

A. **Expansion- and Isolation-Joint-Filler Strips:** ASTM D 1751, 1/2” asphalt-saturated cellulosic fiber.

B. **Bonding Agent:** ASTM C1059/C1059M, Type II, non-dispersible, acrylic emulsion or styrene butadiene.

C. **Epoxy Bonding Adhesive:** three-component, solvent-free, moisture tolerant, epoxy modified cementitious product.
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1. Product: Armatec 110 EpoCem as manufactured by Sika Corporation or specifically approved equal.
2. Types I and II, non-load bearing Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

D. Non-Shrink Grout: Premixed compound, free of chlorides, with non-metallic aggregate, cement water reducing and plasticizing agents; capable of minimum compressive strength of 2400 psi at 48 hours and 7000 psi at 28 days. Grout shall be suitable for contact with potable water. For equipment bases and pipe supports, use non-shrink grout by Master Builders, Embexec 636, Unisorb V-1 or equal.

E. Reglets: Fabricate reglets of galvanized-steel sheet not less than 26 gauge material; in the longest lengths possible with alignment splines for joints; secure to formwork; Type CO as manufactured by Fry Reglet or approved equal. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.

2.10 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
   1. Cement Binder: ASTM C 150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
   2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
   3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
   4. Compressive Strength: Not less than 4000 psi at 28 days when tested according to ASTM C 109.

2.11 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
   1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than Portland cement in concrete as follows:
   1. Fly Ash: 25 percent.
   4. Combined Fly Ash or Pozzolan and Ground Granulated Blast-Furnace Slag: 50 percent Portland cement minimum, with fly ash or Pozzolan not exceeding 25 percent.
   5. Silica Fume: 10 percent.
   6. Combined Fly Ash, Pozzolans, and Silica Fume: 35 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.
   7. Combined Fly Ash or Pozzolans, Ground Granulated Blast-Furnace Slag, and Silica Fume: 50 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.
   8. Limit water-soluble, chloride-ion content in hardened concrete to 0.06 percent by weight of cement.
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9. Admixtures: Use admixtures according to manufacturer’s written instructions.
   a. Use plasticizing admixture in concrete, as required, for placement and workability.
   b. Use water-reducing and retarding admixture when required by high temperatures, low
      humidity, or other adverse placement conditions.
   c. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial
      slabs and parking structure slabs, concrete required to be watertight, and concrete
      with a water-cementitious materials ratio below 0.50.

2.12 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Proportion normal-weight concrete mixture as follows:
   1. Minimum Compressive Strength: Pier, Mat and Spread Footings; foundation walls, slab on
      grade and slab on metal deck: 4000 psi at 28 days.
   2. Maximum Water-Cementitious Materials Ratio: 0.50 for all concrete building elements.
   3. Slump Limits (Conventional Mix):
      a. Slabs: 3 inches plus or minus one inch.
      b. Piers, Foundation Walls and Footings: 4 inches plus or minus one inch.
   4. Slump Limits (Pump Mix):
      a. Final slump (Slabs): 6 1/2 inches plus or minus one inch.
      b. Final Slump (Foundation, walls and footings): 7 1/2 inches plus or minus one inch
   5. Air Content:
      a. Piers, Mats and Spread Footings: 5.5 percent, plus or minus 1.0 percent. at the point
         of delivery.
      b. Slabs: 3 percent, plus or minus 1.0 percent at point of delivery. Do not allow air
         content of trowel finished concrete floors to exceed 3 percent.
   7. Use Admixtures only when approved by the Engineer.
   8. Mix Grout in accordance with the manufacturer’s instructions and specifications.

B. All concrete for the clear-well and backwash waste tank construction shall include Krystol
   Internal Membrane (KIM)@ integral water repellent admixture as manufactured by Kryton or
   specifically approved equal. Admixtures shall be added at a rate as recommended by the
   approved manufacturer.

2.13 FABRICATING REINFORCEMENT

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

2.14 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94
   and ASTM C 1116, and furnish batch ticket information.
   1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from
      1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and
      delivery time to 60 minutes.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to
   ASTM C 94. Mix concrete materials in appropriate drum-type batch machine mixer.
   1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not
      more than 5 minutes after ingredients are in mixer, before any part of batch is released.
   2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each
      additional 1 cu. yd.
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3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify lines, levels, and measurements before proceeding with formwork. Ensure that dimensions agree with the plans.

B. Inspect the formwork and reinforcing that it has been properly set and secured and that all items to be embedded, built-in or pass through concrete are at their proper locations and elevations.

C. The General Construction Contractor shall verify that all other prime contractors have installed concrete inserts, sleeves, and embedded elements of the project, such as conduit, and their work has been totally completed and inspected by the Architect.

D. Ensure that all points of contact with new grout are free from oil, grease and scale.

3.02 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
   2. Class B, 1/4 inch for rough-formed finished surfaces.
      a. Hand trim sides and bottom of earth forms and remove loose soil to the satisfaction of the Architect.
      b. Remove water from forms and excavations and divert water flow to avoid washing over, under or though freshly placed concrete.

D. Construct forms tight enough to prevent loss of concrete mortar. Align form joints.

E. Do not apply form release agent where concrete surfaces are to receive special finishes or applied coatings that may be affected by the agent.

F. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
   1. Install keyways, reglets, recesses, and the like, for easy removal.
   2. Do not use rust-stained steel form-facing material.

G. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
H. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

I. Chamfer: Provide 3/4" inch chamfer on all exterior horizontal and vertical corners and edges of permanently exposed concrete.

J. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

K. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

L. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

M. Coat contact surfaces of forms with form-release agent, according to manufacturer’s written instructions, before placing reinforcement. Do not apply form release agent where concrete surfaces are to receive special finishes or applied coatings that may be affected by the agent.

N. Where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack with non-metallic/ non-shrink grout.

O. Prepare previously placed concrete by cleaning with steel brush and apply a Bonding Agent in accordance with the manufacturer’s specifications and instructions.

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 rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC’s "Code of Standard Practice for Steel Buildings and Bridges."
   2. Install reglets to receive waterproofing 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. Install dovetail anchor slots in concrete structures as indicated.
   4. Ensure that all inserts and embedded items are not disturbed during concrete placement.

3.04 REMOVING AND REUSING FORMS

A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.
   1. Leave formwork for beam soffits, joists, slabs, and other structural elements that supports weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
   2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.05 SHORES AND RESHORES

A. Comply with ACI 318 and ACI 301 for design, installation, and removal of shoring and reshoring.
   1. Do not remove shoring or reshoring until measurement of slab tolerances is complete.

B. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

3.06 VAPOR RETARDERS

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer’s written instructions.
   1. Lap joints 6 inches and seal with manufacturer’s recommended tape.

B. Granular Course: Cover vapor retarder with fine-graded granular material, moisten, and compact with mechanical equipment to elevation tolerances of plus 0 inch or minus 3/4 inch.

3.07 STEEL REINFORCEMENT

A. General: Comply with CRSI’s “Manual of Standard Practice” for placing reinforcement.
   1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars. Use reinforcing splices at minimum of locations and only at locations of minimum stress. Review locations of splices with Architect. Splice locations shall be approved during shop drawing review phase. Rebar splice overly shall be the minimum length as per ACI 318.
   1. Weld reinforcing bars according to AWS D1.4, where indicated.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

F. Take necessary measures to ensure that reinforcement is not disturbed during the placement of concrete.
3.08 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
   1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
   2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
   3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
   4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
   5. Space vertical joints in walls as indicated or at 20' o.c. maximum. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
   6. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C Contraction / Control Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
   1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 3/16"-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
   1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
   2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Section 079200 "Joint Sealants," are indicated.
   3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

F. Ensure joint fillers and devices are not disturbed during placement of concrete.

G. Install all joint fillers and devices in accordance with the manufacturer's instructions and specifications for floor and wall finish.

H. Install joint device anchors. Maintain correct position to allow joint cover flush with floor and wall finish.

I. Install joint covers in one-piece length when adjacent construction activity is complete.
J. Apply sealants in joint devices in accordance with the manufacturer's specifications and instructions.

3.09 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.

C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
   1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
   2. Place concrete with the aid of mechanical vibrators which are capable of transmitting to the concrete not less than 3,000 impulses per minute. Maintain at least three (3) vibrators in good working condition, ready for use when concrete placement begins in any one area.
   3. Do not interrupt successive placement. Do not permit cold joints to occur.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
   1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
   2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
   3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations 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 mixture constituents to segregate.

E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
   1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
   3. Screed slab surfaces with a straightedge and strike off to correct elevations.
   4. Slope surfaces uniformly to drains where required.
   5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

F. Cold-Weather Placement: Comply with 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 average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
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 specified and approved in mixture designs.

G. Hot-Weather Placement: Comply with ACI 301 and ACI 305R and as follows:
1. Maintain concrete temperature below 95 deg F at time of placement. Chilled mixing water 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. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.
3. Maintain records of concrete placement. Record date, locations, quantity, air temperature and test samples taken.
4. In areas with floor drains, maintain floor elevations at walls; pitch surfaces uniformly to the drains maintaining a 1% slope.
5. Cure floor surfaces in accordance with ACI 308.
6. Apply curing compound in accordance with the manufacturer's specifications and instructions in two (2) coats with the second coat at right angles to the first.

3.10 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
   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 defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
   1. Apply to concrete surfaces exposed to public view.

C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:
   1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.

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.

3.11 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch 6 mm in one direction.
C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Re-straighten, cut down high spots, and fill low spots. Repeat float passes and re-straightening until surface is left with a uniform, smooth, granular texture.
   1. Apply float finish to surfaces to receive trowel finish and to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.

D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and re-straighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
   1. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, and ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
   2. Finish surfaces to the following tolerances, according to ASTM E 1155, for a randomly trafficked floor surface:
      a. Specified overall values of flatness, F (F) 30; and of levelness, F (L) 20; with minimum local values of flatness, F (F) 24; and of levelness, F (L) 15; for suspended slabs.
   3. Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-ft. long straightedge resting on two high spots and placed anywhere on the surface does not exceed 3/16 inch.

E. Decorative Exposed Surfaces: Trowel as described in ACI 302.1R; use steel-reinforced plastic trowel blades instead of steel blades to avoid black-burnish marks; decorative exposed surfaces include surfaces to be stained or dyed, pigmented concrete, surfaces to receive liquid hardeners, surfaces to receive dry-shake hardeners, surfaces to be polished, and all other exposed slab surfaces.

F. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set method. While concrete is still plastic, slightly scarify surface with a fine broom.
   1. This surface shall be used for interior and exterior walking surfaces unless noted otherwise. Finish edges of exterior walkway flags with steel tooled radius edge.
   2. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.

G. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, equipment pads, and elsewhere as indicated.
   1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

H. Slip-Resistive Finish: Before final floating, apply slip-resistive finish where indicated and to concrete stair treads, platforms, and ramps. Apply according to manufacturer's written instructions and as follows:
   1. Uniformly spread 25 lb. /100 sq. ft. of dampened slip-resistive over surface in one or two applications. Tamp aggregate flush with surface, but do not force below surface.
   2. After broadcasting and tamping, apply float finish.
   3. After curing, lightly work surface with a steel wire brush or an abrasive stone and water to expose slip-resistive aluminum granules.

I. Finish exposed concrete as specified in Division 09 specifications of this project manual.
3.12 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. All exposed horizontal and vertical wall and slab corners shall have a 3/4" wide chamfered edge.

D. Equipment Bases and Foundations:
   1. Coordinate sizes and locations of concrete bases with actual equipment provided.
   2. Construct concrete bases 6 inches high unless otherwise indicated; and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated or unless required for seismic anchor support.
   3. Minimum Compressive Strength: 4000 psi at 28 days.
   4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 12 inch centers around the full perimeter of concrete base.
   5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base, and anchor into structural concrete substrate.
   6. Prior to pouring concrete, place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
   7. Cast anchor-bolt inserts into bases. Install anchor bolts to elevations required for proper attachment to supported equipment.

E. Grout: Install grout in accordance with the manufacturer's specifications and instructions. Moisten concrete and grout surfaces and allow drying until damp. Remove all standing water. Pump or inject grout into tight spaces to ensure intimate contact with the existing grout. Cure grout with an appropriate membrane in accordance with the manufacturer's specifications and instructions.

3.13 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 and ACI 305R for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb./sq. ft. 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. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
   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 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, 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.
      a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
      b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
      c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.
   3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer’s written instructions. Recruit areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
      a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.

F. Liquid sealer/hardener to be applied on exposed concrete cured with moisture retentive or absorptive covers. The following materials provide varying levels of protection, sealant and hardness. Review products for project appropriateness.
   1. Euclid: Euco Diamond Hard (Liquid Sealer and Hardener)
   2. L&M Construction Chemicals: Seal Hard (Liquid Sealer and Hardener)
   3. Curecrete Chemical Company: Ashford Formula (Liquid Sealer and Hardener)
   4. Midwest Floor Care: Structure Formula (Liquid Sealer and Hardener)
   5. Or approved equal.

3.14 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer’s written instructions.
   1. Defer joint filling until concrete has aged at least three month(s). Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semi rigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.
3.15 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Engineer. Remove and replace concrete that cannot be repaired and patched to Engineer’s approval.

B. Immediately remove all rust spots that have developed during the construction period as soon as directed by the Architect. Remove all rust spots that have formed by the use of temporary handrails.

3.16 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage a special inspector and/or qualified testing and inspecting agency to perform field tests and inspections and prepare test reports. Contractor is responsible to notify the Owners representative at least 72 hours prior to the scheduled work that requires inspection / testing. The presence of the Inspector engaged by the Owner does not relieve the contractor of Quality Control Requirements.

B. Testing and Inspecting: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

C. Inspections:
   1. Steel reinforcement placement.
   2. Headed bolts and studs.
   3. Steel reinforcement welding.
   4. Concrete placement, including conveying and depositing.
   5. Curing procedures and maintenance of curing temperature.
   6. Verification of concrete strength before removal of shores and forms from beams and slabs.

D. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C172 shall be performed according to the following requirements:
   1. Testing Frequency: Obtain one composite sample for each day’s pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
      a. Frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
      b. One (1) additional test cylinder shall be taken during cold weather and be cured under the same conditions as the concrete it represents.
   2. Slump: ASTM C 143; one test at point of placement for each composite sample, but not less than one test for each day’s pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
   3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; ASTM C 173, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day’s pour of each concrete mixture.
   4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
   5. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day’s pour of each concrete mixture.
a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.

b. Cast and field cure two Insert number sets of two standard cylinder specimens for each composite sample.

7. Compressive-Strength Tests: ASTM C 39; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.

a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.

b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.

9. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

10. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7 and 28-day tests.

11. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.

12. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by Architect.

13. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

14. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

E. Measure floor and slab flatness and levelness according to ASTM E 1155 within 24 hours of finishing.

END OF SECTION 033000
PART 1 - GENERAL

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

1.02 SUMMARY
A. Section Includes:
   1. Concrete masonry units.
   2. Mortar and grout.
   3. Ties and anchors.

1.03 DEFINITIONS
A. CMU(s): Concrete masonry unit(s).

1.04 PERFORMANCE REQUIREMENTS
A. Provide unit masonry that develops indicated net-area compressive strengths at 28 days.
   1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to Tables 1 and 2 in TMS 402/602/ASCE 6/TMS 602.
   2. Determine net-area compressive strength of masonry by testing masonry prisms according to ASTM C1314.

1.05 ACTION SUBMITTALS
A. Product Data: For each type of product indicated.

1.06 INFORMATIONAL SUBMITTALS
A. Qualification Data: For testing agency.
B. Material Certificates: For each type and size of the following:
   1. Masonry units.
   2. Anchors, ties, and metal accessories.
C. Mix Designs: For each type of mortar. Include description of type and proportions of ingredients.
   1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C109/C109M for compressive strength, ASTM C 1506 for water retention, and ASTM C91/C91M for air content.
   2. Include test reports, according to ASTM C1019, for grout mixes required to comply with compressive strength requirement.
D. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 402/602.
NY Rising – Governor’s Office of Storm Recovery
GOSR Work Order Number: NTF-1-DES
Edgewater Park Volunteer Fire Department — Storm Hardening and Abatement

SECTION 042200 – CONCRETE UNIT MASONRY

1.07 QUALITY ASSURANCE

A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Deliver pre-blended, dry mortar mix in moisture-resistant containers designed for use with dispensing silos. Store pre-blended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in covered weatherproof dispensing silos.

E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.09 PROJECT CONDITIONS

A. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.

2. Protect sills, ledges, and projections from mortar droppings.

3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.

4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

PART 2 - PRODUCTS

2.01 MASONRY UNITS, GENERAL

A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects will be exposed in the completed Work.

B. Fire-Resistance Ratings: Where indicated, provide units that comply with requirements for fire-resistance ratings indicated as determined by testing according to ASTM E119, by equivalent masonry thickness, or by other means, as acceptable to authorities having jurisdiction.
2.02 CONCRETE MASONRY UNITS

A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.

B. CMUs: ASTM C90.
   1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2800 psi (19.3 MPa).
   2. Density Classification: Normal weight.
   3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.

2.03 MORTAR AND GROUT MATERIALS

A. Regional Materials: Aggregate for mortar and grout, cement, and lime shall be extracted, harvested, or recovered, as well as manufactured, within 500 miles of Project site.

B. Portland Cement: ASTM C150/C150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

C. Hydrated Lime: ASTM C207, Type S.

D. Portland Cement-Lime Mix: Packaged blend of Portland cement and hydrated lime containing no other ingredients.

E. Aggregate for Mortar: ASTM C144.
   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.
   3. White-Mortar Aggregates: Natural white sand or crushed white stone.
   4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

F. Grout: ASTM C476. 2,000 psi minimum
   1. Fine aggregate: sand.
   2. Coarse aggregate: 3/8" chip gravel


H. Cold-Weather Admixture: Non-chloride, noncorrosive, accelerating admixture complying with ASTM C494/C494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. Euclid Chemical Company (The): Accelguard 80.
      c. Sonneborn Products, BASF Aktiengesellschaft: Trimix-NCA.
NY Rising – Governor’s Office of Storm Recovery  
GOSR Work Order Number: NTF-1-DES  
Edgewater Park Volunteer Fire Department — Storm Hardening and Abatement

SECTION 042200 – CONCRETE UNIT MASONRY

I. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs, containing integral water repellent by same manufacturer.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. ACM Chemistries, Inc.; RainBloc for Mortar.
      b. BASF Aktiengesellschaft; MasterPel 240MA Mortar Admixture.

J. Water: Potable.

2.04 REINFORCEMENT

2.05 TIES AND ANCHORS

A. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated.
   3. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

2.06 MISCELLANEOUS ANCHORS

A. Unit Type Inserts in Concrete: Cast-iron or malleable-iron wedge-type inserts.

B. Post-installed Anchors: chemical anchors.
   1. Load Capacity: Capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E488/E488M, conducted by a qualified independent testing agency.
   2. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5 unless otherwise indicated.

2.07 MISCELLANEOUS MASONRY ACCESSORIES

A. Compressible Filler: Pre-molded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.

B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D2000, Designation M2AA-805 or PVC, complying with ASTM D 2287, Type PVC-65406 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

2.08 MORTAR AND GROUT 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 Portland cement-lime masonry cement mortar unless otherwise indicated.
   3. For exterior masonry, use Portland cement-lime masonry cement mortar.
   4. For reinforced masonry, use Portland cement-lime masonry cement mortar.
   5. 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. Pre-blended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a pre-blended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.

C. Mortar for Unit Masonry: Comply with ASTM C270, 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. For masonry below grade or in contact with earth, use Type M.
   2. For reinforced masonry, use Type S.
   3. For mortar parge coats, use Type N.
   4. For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls; for interior load-bearing walls; for interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type N.
   5. For interior non-load-bearing partitions, Type O may be used instead of Type N.

D. Grout for Unit Masonry: Comply with ASTM C476.
   1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 402/602 for dimensions of grout spaces and pour height.
   2. Proportion grout in accordance with ASTM C476, Table 1 or paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi(14 MPa).
   3. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C143/C143M.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
   1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
   2. Verify that foundations are within tolerances specified.
   3. Verify that reinforcing dowels are properly placed.

B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.

C. Proceed with installation only after unsatisfactory conditions have been corrected.
SECTION 042200 – CONCRETE UNIT MASONRY

3.02 INSTALLATION, GENERAL

A. Build chases and recesses to accommodate items specified in this and other Sections.

B. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.

C. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

3.03 TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation do not vary by more than plus 1/2 inch or minus 1/4 inch.
2. For location of elements in plan do not vary from that indicated by more than plus or minus 1/2 inch.
3. For location of elements in elevation do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls do not vary from level by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet or 1/2 inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
5. For lines and surfaces do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2 inch maximum.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch with a maximum thickness limited to 1/2 inch.
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. 3 mm.

3.04 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets.
Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4-inches. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.

C. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar before laying fresh masonry.

D. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

E. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.

F. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

G. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.
   1. Install compressible filler in joint between top of partition and underside of structure above.
   2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c. unless otherwise indicated.
   3. Wedge non-load-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.
   4. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 078446 - FIRE-RESISTIVE JOINT SYSTEMS.

3.05 MORTAR BEDDING AND JOINTING

A. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

B. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

C. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

3.06 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform tests and inspections. Retesting of materials that fail to meet specified requirements shall be done at Contractor's expense.

B. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C140/C140M for compressive strength.
C. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C 780.
D. Mortar Test (Property Specification): For each mix provided, according to ASTM C780. Test mortar for compressive strength.
E. Grout Test (Compressive Strength): For each mix provided, according to ASTM C1019.

3.07 PARGING
A. Parge exterior faces of below-grade masonry walls, where indicated, in 2 uniform coats to a total thickness of 3/4 inch. Dampen wall before applying first coat and scarify first coat to ensure full bond to subsequent coat.
B. Use a steel-trowel finish to produce a smooth, flat, dense surface with a maximum surface variation of 1/8 inch per foot. Form a wash at top of parging and a cove at bottom.
C. Damp-cure parging for at least 24 hours and protect parging until cured.

3.08 REPAIRING, POINTING, AND CLEANING
A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

3.09 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. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
   1. Crush masonry waste to less than 4 inches in each dimension.
   2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Section 312000 - EARTH MOVING.
   3. Do not dispose of masonry waste as fill within 18 inches of finished grade.
C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 042200
PART 1 - GENERAL

1.01 RELATED DOCUMENTS
   A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and general requirements of GOSR Specification Sections, apply to this Section.

1.02 SUMMARY
   A. Section Includes:
      1. Steel pipe and tube railings.

1.03 PERFORMANCE REQUIREMENTS
   A. Delegated Design: Design railings, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
   
   B. General: In engineering railings to withstand structural loads indicated, determine allowable design working stresses of railing materials in accordance with ANSI/NAAMM AMP 521 - latest edition and based on the following:
      1. Steel: 72 percent of minimum yield strength.

   C. Structural Performance: Railings shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
      1. Handrails and Top Rails of Guards:
         a. Uniform load of 50 lbf/ft (0.73 kN/m) applied in any direction.
         b. Concentrated load of 200 lbf (0.89 kN) applied in any direction.
         c. Uniform and concentrated loads need not be assumed to act concurrently.
      2. Infill of Guards:
         a. Concentrated load of 50 lbf (0.22 kN) applied horizontally on an area of 1 sq. ft. (0.093 sq. m).
         b. Infill load and other loads need not be assumed to act concurrently.

   D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
      1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

   E. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.04 ACTION SUBMITTALS
   A. Product Data: For the following:
      1. Manufacturer’s product lines of mechanically connected railings.
      2. Railing brackets.

   B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

   C. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

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SECTION 055213 - PIPE AND TUBE RAILINGS

1.05 INFORMATIONAL SUBMITTALS
   A. Qualification Data: For qualified professional engineer.

1.06 QUALITY ASSURANCE
   A. Source Limitations: Obtain each type of railing from single source from single manufacturer.
   B. Welding Qualifications: Qualify procedures and personnel according to the following:
      1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.07 PROJECT CONDITIONS
   A. Field Measurements: Verify actual locations of structural anchorage members and other construction contiguous with metal fabrications by field measurements before fabrication.

1.08 COORDINATION AND SCHEDULING
   A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers’ written recommendations to ensure that shop primers and topcoats are compatible with one another.
   B. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.
   C. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

PART 2 - PRODUCTS

2.01 MANUFACTURERS
   A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      1. Steel Pipe and Tube Railings:
         a. Wagner, R & B, Inc.; a division of the Wagner Companies.
         b. Or approved equal.

2.02 METALS, GENERAL
   A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
   B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

2.03 STEEL AND IRON
   A. Tubing: ASTM A 500 (cold formed) or ASTM A 513.
B. Pipe: ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
   1. Provide galvanized finish for exterior installations and where indicated.

C. Plates, Shapes, and Bars: ASTM A 36/A 36M.

2.04 FASTENERS

A. General: Provide the following:
   1. Hot-Dip Galvanized Railings: Type 304 stainless-steel or hot-dip zinc-coated steel fasteners complying with ASTM A 153/A 153M or ASTM F 2329 for zinc coating.

B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.

C. Fasteners for Interconnecting Railing Components:
   1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless otherwise indicated.
   2. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless exposed fasteners are unavoidable or are the standard fastening method for railings indicated.
   3. Provide tamper-resistant flat-head machine screws for exposed fasteners unless otherwise indicated.


2.05 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Etching Cleaner for Galvanized Metal: Complying with MPI#25.

C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

D. Shop Primers: Provide primers that comply with Section 099113 "Exterior Painting" and Section 099123.01 "Interior Painting."

E. Intermediate Coats and Topcoats: Provide products that comply with Section 099113 "Exterior Painting," or Section 099123.01, "Interior Painting."

F. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

G. Non-shrink, Non-metallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.
H. Anchoring Cement: Factory-packaged, non-shrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.
   1. Water-Resistant Product: At exterior locations and where indicated, provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

2.06 FABRICATION

A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.

B. Assemble railings in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.

C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

D. Form work true to line and level with accurate angles and surfaces.

E. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.

G. Connections: Fabricate railings with welded connections unless otherwise indicated.

H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove flux immediately.
   4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.

I. Form changes in direction as follows:
   1. As detailed.

J. Bend members in jigs to produce uniform curvature for each configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

K. Close exposed ends of railing members with prefabricated end fittings.

L. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch (6 mm) or less.
M. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
   1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers, or other means to transfer loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.

N. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.

2.07 FINISHES, GENERAL
   A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
   B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
   C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
   D. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.

2.08 STEEL AND IRON FINISHES
   A. Galvanized Railings:
      3. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
      4. Fill vent and drain holes that will be exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.
   B. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.
   C. Preparing Galvanized Railings for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL
   A. Fit exposed connections together to form tight, hairline joints.
   B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
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1. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
2. Set posts plumb within a tolerance of 1/16 inch in 3 feet (2 mm in 1 m).

C. Adjust railings before anchoring to ensure matching alignment at abutting joints.

3.02 RAILING CONNECTIONS

A. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.

B. Expansion / Slip Movement Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches (50 mm) beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within 6 inches (150 mm) of post.

3.03 ANCHORING POSTS

A. Form or core-drill holes not less than 5 inches (125 mm) deep and 3/4 inch (20 mm) larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with non-shrink, non-metallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions.

B. Leave anchorage joint exposed with 1/8-inch (3-mm) buildup, sloped away from post.

C. Anchor posts to metal surfaces with circular flanges floor type as required by conditions, connected to posts and to metal supporting members as follows:

3.04 ATTACHING RAILINGS

A. Anchor railing ends at decks with round flanges anchored to deck construction and welded to railing ends.

B. Anchor railing ends to metal surfaces with flanges through bolted to metal surfaces and flanged Escutcheons welded to railing ends.

C. Attach railings to wall with wall brackets, except where end flanges are used. Provide brackets with 1-1/2-inch (38-mm) clearance from inside face of handrail and finished wall surface. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.

3.05 ADJUSTING AND CLEANING

A. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 099113 "Exterior Painting" and Section 099123.01 "Interior Painting."

3.06 PROTECTION

A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

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SECTION 055213 - PIPE AND TUBE RAILINGS

END OF SECTION 055213
PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:
   1. Treated Wood Members.
   2. Miscellaneous Framing and Sheathing.
   3. Plywood Subfloors and Roof Sheathing.
   4. Fasteners
   5. Structural Hold Downs, Connectors and Framing Accessories.
   6. Wood blocking, cants, and nailers.
   7. Wood furring and grounds.

1.03 REFERENCES:

A. AWPA - (American Wood Preservers Association) C1 - All Timber Products Preservative Treatment by Pressure Process.


C. AITC - American Institute of Timber Construction.

D. US Department of Commerce (DOC):
   1. DOC PS 1 - Performance Standard for Structural Plywood.
   2. DOC PS 2 - Performance Standard for Wood-Based Structural Panels.

E. International Code Council (ICC):
   1. ICC IBC - International Building Code

1.04 DEFINITIONS

A. Exposed Framing: Framing not concealed by other construction.

B. Dimension Lumber: Lumber of 2 inches nominal (38 mm actual) or greater but less than 5 inches nominal (114 mm actual) in least dimension.

C. Timber: Lumber of 5 inches nominal (114 mm actual) or greater in least dimension.

D. Lumber grading agencies, and the abbreviations used to reference them, include the following:
   2. NLGA: National Lumber Grades Authority.
   4. WCLIB: West Coast Lumber Inspection Bureau.
   5. WWPA: Western Wood Products Association.
1.05 ACTION SUBMITTALS

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

1.06 INFORMATIONAL SUBMITTALS

A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

B. Evaluation Reports: For the following, from ICC-ES:
   1. Wood-preservative-treated wood.
   2. Fire-retardant-treated wood.
   3. Plywood.
   4. Engineered wood products.
   5. Shear panels.
   8. Expansion anchors.
   9. Metal framing anchors.

1.07 QUALITY ASSURANCE

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

1.08 DELIVERY, STORAGE, AND HANDLING

A. Handle, Transport and Store Plywood Panels in accordance with the APA Storage and Handling recommendations.

B. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.
C. Stack panels flat with a minimum of three, full panel width, 4 inch by 4 inch spacers per eight foot panel length beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.01 WOOD PRODUCTS, GENERAL

A. Certified Wood: Materials shall be produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship" for the following:
1. Dimension lumber framing.
2. Miscellaneous lumber.

B. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
1. Factory mark each piece of lumber with grade stamp of grading agency.
2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece or omit grade stamp and provide certificates of grade compliance issued by grading agency.
3. 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.
4. Provide dressed lumber, S4S, unless otherwise indicated.

C. Maximum Moisture Content of Lumber: 15 percent for 2-inch nominal (38-mm actual) thickness or less, 19 percent for more than 2-inch nominal (38-mm actual) thickness 15 percent for 2-inch nominal thickness or less, no limit for more than 2-inch nominal (38-mm actual) thickness unless otherwise indicated.

D. Plywood: Conform to requirements and recommendations provided in DOC PS 1 - Voluntary Product Standard for Construction and Industrial Structural Plywood.

2.02 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC4A for exterior construction not in contact with the ground, and Use Category UC4B for items in contact with the ground.
1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
2. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece or omit marking and provide certificates of treatment compliance issued by inspection agency.

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

2.03 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.
   1. Use treatment that does not promote corrosion of metal fasteners.
   2. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.
   3. Design Value Adjustment Factors: Treated lumber shall be tested according ASTM D 5664 and design value adjustment factors shall be calculated according to ASTM D 6841.

C. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Kiln-dry plywood after treatment to a maximum moisture content of 15 percent.

D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency. Mark panels on surfaces that will not be exposed in the final construction.
   1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece.

E. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not bleed through, contain colorants, or otherwise adversely affect finishes.

F. Application: Treat items indicated on Drawings, and the following:
   1. Concealed blocking.
   2. Framing for non-load-bearing exterior walls.
   3. Roof construction.
2.04 DIMENSION LUMBER FRAMING

A. Non-Load-Bearing Interior Partitions: Construction or No. 2 grade.
   1. Application: Interior partitions not indicated as load-bearing.
   2. Species:
      a. Hem-fir (north); NLGA.
      b. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
      c. Northern species; NLGA.

B. Load-Bearing Partitions: No. 2 grade.
   1. Species:
      a. Southern pine; SPIB.
      b. Douglas fir-larch; WCLIB or WWPA.
      c. Hem-fir; WCLIB or WWPA.
      d. Douglas fir-larch (north); NLGA.
      e. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.

C. Load-Bearing Partitions: Any species and grade with a modulus of elasticity of at least 1,600,000 psi (11040 MPa) and an extreme fiber stress in bending of at least for 2-inch nominal thickness and 12-inch nominal (286-mm actual) width for single-member use.

D. Ceiling Joists: Construction or No. 2 grade.
   1. Species:
      a. Southern pine; SPIB.
      b. Hem-fir; WCLIB or WWPA.
      c. Douglas fir-south; WWPA.
      d. Eastern softwoods; NeLMA.

E. Joists, Rafters, and Other Framing Not Listed Above: No. 1 grade.
   1. Species:
      a. Douglas fir-larch; WCLIB or WWPA.
      b. Douglas fir-larch (north); NLGA.
      c. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.

F. Joists, Rafters, and Other Framing Not Listed Above: Any species and grade with a modulus of elasticity of at least 1,500,000 psi (10 350 MPa) and an extreme fiber stress in bending of at least 1000 psi (6.9 MPa) for 2-inch nominal (38-mm actual) thickness and 12-inch nominal (286-mm actual) width for single-member use.

G. Exposed Framing: Provide material hand-selected for uniformity of appearance and freedom from characteristics, on exposed surfaces and edges, that would impair finish appearance, including decay, honeycomb, knot-holes, shake, splits, torn grain, and wane.
   1. Species and Grade: Southern pine; No. 1 grade; SPIB.
   2. Species and Grade: Douglas fir-south; No. 1 grade; WWPA.
   3. Species and Grade: Hem-fir; No. 1 grade; WCLIB or WWPA.

2.05 TIMBER FRAMING

A. Provide timber framing complying with the following requirements, according to grading rules of grading agency indicated:
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SECTION 061000 - ROUGH CARPENTRY

1. Species and Grade: Douglas fir-larch, Douglas fir-larch (north), or Douglas fir-south; No. 1 grade; NLGA, WCLIB, or WWPA.
2. Species and Grade: Eastern hemlock, eastern hemlock-tamarack, or eastern hemlock-tamarack (north); No. 1 grade; NeLMA or NLGA.
3. Species and Grade: Mixed oak; Select Structural grade; NeLMA.

2.06 PLYWOOD SUBFLOORS AND ROOF SHEATHING

A. Plywood Subflooring: 3/4 Performance category APA Rated STURD-I-FLOOR, 24” o.c., Group 1, Exterior, 48 inch by 96 inch, B-C face grades, Tongue and Groove (T&G) edges.

2.07 CONSTRUCTION MOUNTING PANELS

A. Communications and Electrical Room Mounting Boards: PS 1, APA rated A-D faced plywood or MDF; 3/4 inch thick; flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.

2.08 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
   1. Blocking.
   2. Nailers.

B. For items of dimension lumber size, provide Construction or No. 2 grade lumber and any of the following species:
   1. Hem-fir (north); NLGA.
   2. Mixed southern pine; SPIB.
   3. Hem-fir; WCLIB or WWPA.
   4. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.

C. For concealed boards, provide lumber with 15 percent maximum moisture content and any of the following species and grades:
   1. Spruce-pine-fir (south) or spruce-pine-fir; Construction or No. 2 Common grade; NeLMA, NLGA, WCLIB, or WWPA.
   2. Eastern softwoods; No. 2 Common grade; NeLMA.

D. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

E. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

F. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.09 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
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SECTION 061000 - ROUGH CARPENTRY

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M or Type 304 stainless steel.


D. Lag Bolts: ASME B18.2.1 (ASME B18.2.3.8M).

E. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

F. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry assemblies and equal to four times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.

2.10 METAL FRAMING ANCHORS

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
   1. Cleveland Steel Specialty Co.
   2. Simpson Strong-Tie Co., Inc.
   3. USP Structural Connectors.

B. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those of products of manufacturers listed. Manufacturer’s published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

C. Provide products that have been approved by the ICC-Evaluation Service with an accompanying Evaluation Service Report (ESR) listing locations of allowable use.

D. Joist Hangers: U-shaped joist hangers with 2-inch- (50-mm-) long seat and 1-1/4-inch-(32-mm-) wide nailing flanges at least 85 percent of joist depth.
   1. Thickness: 0.062 inch (1.6 mm).

E. Top Flange Hangers: U-shaped joist hangers, full depth of joist, formed from metal strap with tabs bent to extend over and be fastened to supporting member.
   1. Strap Width: 1-1/2 inches (38 mm).
   2. Thickness: 0.062 inch (1.6 mm).

F. Bridging: Rigid, V-section, nail-less type, 0.050 inch (1.3 mm) thick, length to suit joist size and spacing.

G. Joist Ties: Flat straps, with holes for fasteners, for tying joists together over supports.
   1. Width: 1-1/4 inches (32 mm).
   2. Thickness: 0.062 inch (1.6 mm).
3. Length: As indicated.

H. Rafter Tie-Downs: Bent strap tie for fastening rafters or roof trusses to wall studs below, 1-1/2 inches (38 mm) wide by 0.050 inch (1.3 mm) thick. Tie fasteners to side of rafter or truss, face of top plates, and side of stud below.

I. Rafter Tie-Downs (Hurricane or Seismic Ties): Bent strap tie for fastening rafters or roof trusses to wall studs below, 2-1/4 inches (57 mm) 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.

J. Floor-to-Floor Ties: Flat straps, with holes for fasteners, for tying upper floor wall studs to band joists and lower floor studs, 1-1/4 inches (32 mm) wide by 0.050 inch (1.3 mm) thick by 36 inches (914 mm) long.

K. Hold-Downs: Brackets for bolting to wall studs and securing to foundation walls with anchor bolts or to other hold-downs with threaded rods and designed with first of two bolts placed seven bolt diameters from reinforced base.
   2. Width: 3-3/16 inches (81 mm).
   3. Body Thickness: 0.138 inch (3.5 mm).
   4. Base Reinforcement Thickness: 0.108 inch (2.8 mm)

L. Wall Bracing: T-shaped bracing made for letting into studs in saw kerf, 1-1/8 inches (29 mm) wide by 9/16 inch (14 mm) deep by 0.034 inch (0.85 mm) thick with hemmed edges.

M. Wall Bracing: Angle bracing made for letting into studs in saw kerf, 15/16 by 15/16 by 0.040 inch (24 by 24 by 1 mm) thick with hemmed edges.

2.11 MISCELLANEOUS MATERIALS

A. Sill-Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch (6.4 mm) thick, selected from manufacturer's standard widths to suit width of sill members indicated.

B. Adhesives for Gluing Furring to Concrete or Masonry: Formulation complying with ASTM D 3498 that is approved for use indicated by adhesive manufacturer.

PART 3 - EXECUTION

3.01 PREPARATION OF SURFACES

A. Surfaces to receive new wood members shall be free of all dirt, debris, and loose materials. Exposed surfaces shall be mechanically scraped if necessary, to remove projections.

B. Surfaces shall have no free water present in any form (rain, dew, frost, snow or ice).

C. Contractor is responsible to inspect all exposed surfaces to see that conditions are satisfactory for installation of new work.

3.02 INSTALLATION, GENERAL

A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit.
Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

B. Framing Standard: Comply with AF&PA’s WCD 1, “Details for Conventional Wood Frame Construction,” unless otherwise indicated.

C. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb and in true alignment until completion of erection and installation of permanent bracing.

D. Place horizontal members flat, crown side up.

E. Construct load bearing framing and curb members full length without splices.

F. Double members at all openings. Space short members over and under opening to member spacing.

G. Bridge framing in excess of 8 feet span at midspan.

H. Coordinate installation of adjacent construction.

I. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.

J. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels.

K. Metal Framing Anchors: Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

L. Install sill sealer gasket to form continuous seal between sill plates and foundation walls.

M. Do not splice structural members between supports unless otherwise indicated.

N. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
   1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches (406 mm) o.c.

O. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:
   1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches (2438 mm) o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
   2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches (2438 mm) o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal- (38-mm actual-) thickness.
   3. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet (6 m) o.c.
P. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

Q. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
   1. NES NER-272 for power-driven fasteners.

R. Warped wood members shall not be used unless they can be fastened adequately to permanently hold them in their required alignment.

S. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.
   1. Comply with approved fastener patterns where applicable. Before fastening, mark fastener locations, using a template made of sheet metal, plastic, or cardboard.
   2. Use finishing nails unless otherwise indicated. Countersink nail heads and fill holes with wood filler.
   3. Use common nails unless otherwise indicated. Drive nails snug but do not countersink nail heads.

3.03 WOOD GROUND, BLOCKING, AND NAILER INSTALLATION

A. Install where indicated and where required for screeding or attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

C. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

D. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches (38 mm) wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.04 WOOD FURRING INSTALLATION

A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.

3.05 WALL AND PARTITION FRAMING INSTALLATION

A. General: Provide single bottom plate and double top plates using members of 2-inch nominal (38-mm actual) thickness whose widths equal that of studs, except single top plate may be used for non-load-bearing partitions and for load-bearing partitions where framing members bearing on partition are located directly over studs. Fasten plates to supporting construction unless otherwise indicated.
   1. For exterior walls, provide 2-by-6-inch nominal- (38-by-140-mm actual-) size wood studs spaced 24 inches (610 mm) o.c. unless otherwise indicated.
   2. For interior partitions and walls, provide 2-by-4-inch nominal- (38-by-89-mm actual-) size wood studs spaced 16 inches (406 mm) o.c. unless otherwise indicated.
B. Frame openings with multiple studs and headers. Provide nailed header members of thickness equal to width of studs. Support headers on jamb studs.
   1. For non-load-bearing partitions, provide double-jamb studs and headers not less than 4-inch nominal (89-mm actual) depth for openings 48 inches and less in width, 6-inch nominal (140-mm actual) depth for openings 48 to 72 inches (1200 to 1800 mm) in width, 8-inch nominal (184-mm actual) depth for openings 72 to 120 inches (1900 to 3000 mm) in width, and not less than 10-inch nominal (235-mm actual) depth for openings 10 to 12 feet (3 to 3.6 m) in width.
   2. For load-bearing walls, provide double-jamb studs for openings 60 inches (1500 mm) and less in width, and triple-jamb studs for wider openings. Provide headers of depth indicated or, if not indicated, according to Table R502.5(1) or Table R502.5(2), as applicable, in ICC's International Residential Code for One- and Two-Family Dwellings.

3.06 FLOOR JOIST FRAMING INSTALLATION

   A. General: Install floor joists with crown edge up and support ends of each member with not less than 1-1/2 inches (38 mm) of bearing on wood or metal, or 3 inches on masonry. Attach floor joists as follows:
      1. Where supported on wood members, by toe nailing or by using metal framing anchors.
      2. Where framed into wood supporting members, by using wood ledgers as indicated or, if not indicated, by using metal joist hangers.

   B. Fire Cuts: At joists built into masonry, bevel cut ends 3 inches (76 mm) and do not embed more than 4 inches (102 mm).

   C. Frame openings with headers and trimmers supported by metal joist hangers; double headers and trimmers where span of header exceeds 48 inches (1200 mm).

   D. Do not notch in middle third of joists; limit notches to one-sixth depth of joist, one-third at ends. Do not bore holes larger than 1/3 depth of joist; do not locate closer than 2 inches (50 mm) from top or bottom.

   E. Provide solid blocking of 2-inch nominal (38-mm actual) thickness by depth of joist at ends of joists unless nailed to header or band.

   F. Lap members framing from opposite sides of beams, girders, or partitions not less than 4 inches (102 mm) or securely tie opposing members together. Provide solid blocking of 2-inch nominal (38-mm actual) thickness by depth of joist over supports.

   G. Anchor members paralleling masonry with 1/4-by-1-1/4-inch (6.4-by-32-mm) metal strap anchors spaced not more than 96 inches (2438 mm) o.c., extending over and fastening to three joists. Embed anchors at least 4 inches (102 mm) into grouted masonry with ends bent at right angles and extending 4 inches (102 mm) beyond bend.

   H. Provide solid blocking between joists under jamb studs for openings.

   I. Under non-load-bearing partitions, provide double joists separated by solid blocking equal to depth of studs above.
      1. Provide triple joists separated as above, under partitions receiving ceramic tile and similar heavy finishes or fixtures.
J. Provide bridging of type indicated below, at intervals of 96 inches (2438 mm) o.c., between joists.
   1. Diagonal wood bridging formed from bevel-cut, 1-by-3-inch nominal- (19-by-64-mm actual-) size lumber, double-crossed and nailed at both ends to joists.
   2. Steel bridging installed to comply with bridging manufacturer's written instructions.

3.07 CEILING JOIST AND RAFTER FRAMING INSTALLATION

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.
   1. Where ceiling joists are at right angles to rafters, provide additional short joists parallel to rafters from wall plate to first joist; nail to ends of rafters and to top plate and nail to first joist or anchor with framing anchors or metal straps. Provide 1-by-8-inch nominal-(19-by-184-mm actual-) size or 2-by-4-inch nominal- (38-by-89-mm actual-) size stringers spaced 48 inches (1200 mm) o.c. crosswise over main ceiling joists.

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 indicated or, if not indicated, of same thickness as regular rafters and 2 inches (50 mm) deeper. Bevel ends of jack rafters for full bearing against valley rafters.
   2. At hips, provide hip rafter of size indicated or, if not indicated, of same thickness as regular rafters and 2 inches (50 mm) deeper. Bevel ends of jack rafters for full bearing against hip rafter.

C. Provide collar beams (ties) as indicated or, if not indicated, provide 1-by-6-inch nominal-(19-by-140-mm actual-) size boards between every third pair of rafters, but not more than 48 inches (1219 mm) o.c. Locate below ridge member, at third point of rafter span. Cut ends to fit roof slope and nail to rafters.

D. Provide special framing as indicated for eaves, overhangs, dormers, and similar conditions if any.

3.08 STAIR FRAMING INSTALLATION

A. Provide stair framing members of size, space, and configuration indicated or, if not indicated, to comply with the following requirements:
   1. Size: 2-by-12-inch nominal- (38-by-286-mm actual-) size, minimum.
   3. Notching: Notch rough carriages to receive treads, risers, and supports; leave at least 3-1/2 inches (89 mm) of effective depth.
   4. Spacing: At least three framing members for each 36-inch (914-mm) clear width of stair.

B. Provide stair framing with no more than 3/16-inch (4.7-mm) variation between adjacent treads and risers and no more than 3/8-inch (9.5-mm) variation between largest and smallest treads and risers within each flight.

3.09 TOLERANCES

A. Surface Flatness of Floor: 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.
3.10 PROTECTION

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

END OF SECTION 061000
PART 1 GENERAL

1.01 SECTION INCLUDES
A. Finish carpentry items.
B. Wood door frames, glazed frames.
C. Wood stair treads, risers, guardrails, handrails and balusters.
D. Wood casings and moldings.
E. Hardware and attachment accessories.

1.02 RELATED REQUIREMENTS
A. Section 061000 - Rough Carpentry: Support framing, grounds, and concealed blocking.
B. Section 081416 - Flush Wood Doors.

1.03 REFERENCE STANDARDS
A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.
D. WDMA I.S. 4 - Industry Specification for Preservative Treatment for Millwork; 2013.

1.04 SUBMITTALS
A. Product Data:
   1. Provide data on fire retardant treatment materials and application instructions.
B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Scale of Drawings: 1-1/2 inch to 1 foot (125 mm to 1 m), minimum.
   2. Provide the information required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
   3. Include certification program label.
C. Samples: Submit two samples of wood trim and wood handrails 6 inch (152.4 mm) long.
D. Certificate: Submit labels and certificates required by quality assurance and quality control programs.

1.05 DELIVERY, STORAGE, AND HANDLING
A. Protect from moisture damage.
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SECTION 062000 - FINISH CARPENTRY

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.

C. Interior Woodwork Items:
   1. Moldings, Bases, Casings, and Miscellaneous Trim: Clear white pine; prepare for paint finish.
   2. Door, Glazed Light, and Pocket Door Frames: White birch; prepare for paint finish.
   3. Window Sills: Clear fir; prepare for paint finish.
   4. Stairs, Balustrades, and Handrails: Clear fir; prepare for paint finish.

2.02 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

2.03 FASTENINGS

A. Adhesive for Purposes Other Than Laminate Installation: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.

B. Fasteners: Of size and type to suit application; threaded steel finish in concealed locations and stainless steel finish in exposed locations.

2.04 WOOD TREATMENT

A. Factory-Treated Lumber: Comply with requirements of AWPA U1 - Use Category System for pressure impregnated wood treatments determined by use categories, expected service conditions, and specific applications.

B. Wood Preservative by Pressure Treatment (PT Type): Provide AWPA U1 treatment using waterborne preservative with 0.25 percent retainage.

C. Water Repellent Preservative Treatment by Dipping Method: WDMA I.S. 4, with 0.25 percent retainage.

D. Shop pressure treat wood materials requiring fire rating to concealed wood blocking.

E. Provide identification on fire retardant treated material.

F. Deliver fire retardant treated materials cut to required sizes. Minimize field cutting.

2.05 FABRICATION

A. Shop assemble work for delivery to site, permitting passage through building openings.
B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

2.06 SHOP FINISHING

A. Sand work smooth and set exposed nails and screws.

B. Apply wood filler in exposed nail and screw indentations.

C. On items to receive transparent finishes, use wood filler that matches surrounding surfaces and is of type recommended for the applicable finish.

D. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
   1. Transparent:
      a. System - 1, Lacquer, Nitrocellulose.
      b. Stain: As selected by Architect/Engineer.
      c. Sheen: Flat.
   2. Opaque:
      a. System - 1, Lacquer, Nitrocellulose.
      b. Color: As selected by Architect/Engineer.
      c. Sheen: Flat.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.02 INSTALLATION

A. Install custom fabrications in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.

B. Set and secure materials and components in place, plumb and level.

C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch (0.79 mm). Do not use additional overlay trim to conceal larger gaps.

3.03 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch (1.6 mm).

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch (0.79 mm).

END OF SECTION 062000
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SECTION 072100 - THERMAL INSULATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS
   A. Drawings and general provisions of the Contract, including General and Supplementary 
      Conditions and general requirements of GOSR Specification Sections, apply to this Section.

1.02 SUMMARY
   A. Section Includes:
      1. Foam-plastic board insulation.
      2. Glass-fiber blanket insulation.
      3. Vapor retarders.

1.03 ACTION SUBMITTALS
   A. Product Data: For each type of product indicated.

1.04 INFORMATIONAL SUBMITTALS
   A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified 
      testing agency, for each product.
   B. Research/Evaluation Reports: For foam-plastic insulation, from ICC-ES.

1.05 QUALITY ASSURANCE
   A. Surface-Burning Characteristics: As determined by testing identical products according to 
      ASTM E84 by a qualified testing agency. Identify products with appropriate markings of 
      applicable testing agency.

1.06 DELIVERY, STORAGE, AND HANDLING
   A. Protect insulation materials from physical damage and from deterioration due to moisture, 
      soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's 
      written instructions for handling, storing, and protecting during installation.
   B. Protect foam-plastic board insulation as follows:
      1. Do not expose to sunlight except to necessary extent for period of installation and 
         concealment.
      2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project 
         site before installation time.
      3. Quickly complete installation and concealment of foam-plastic board insulation in each 
         area of construction.

PART 2 - PRODUCTS

2.01 FOAM-PLASTIC BOARD INSULATION
   A. Extruded-Polystyrene Board Insulation: ASTM C578, of type and minimum compressive 
       strength indicated below, with maximum flame-spread and smoke-developed indexes of 75 and 
       450, respectively, per ASTM E84.

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SECTION 072100 - THERMAL INSULATION

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. DiversiFoam Products.
   b. Dow Chemical Company.
   c. Owens Corning.
   d. Pactiv Building Products.

2. Type IV, 25 psi minimum.

B. Adhesive for Bonding Insulation: Product with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.

C. Tape joints in rigid insulation with Henry Blueskin SA or equivalent material as recommended by the approved insulation manufacturer.

2.02 GLASS-FIBER BLANKET INSULATION

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   2. Knauf Insulation.
   3. Owens Corning.

B. Foil-Faced, Glass-Fiber Blanket Insulation: ASTM C665, Type III (reflective faced), Class B (faced surface with a flame-propagation resistance of 0.12 W/sq. cm); Category 1 (membrane is a vapor barrier), faced with foil scrim, foil-scrim kraft, or foil-scrim polyethylene.

C. Sustainability Requirements: Provide glass-fiber blanket insulation as follows:
   1. Free of Formaldehyde: Insulation manufactured with 100 percent acrylic binders and no formaldehyde.
   2. Low Emitting: Insulation tested according to ASTM D 5116 and shown to emit less than 0.05 ppm formaldehyde.

2.03 VAPOR RETARDERS

A. Reinforced-Polyethylene Vapor Retarders: Two outer layers of polyethylene film laminated to an inner reinforcing layer consisting of either nylon cord or polyester scrim and weighing not less than 25 lb/1000 sq. ft. (12 kg/100 sq. m), with maximum permeance rating of 0.0507 perm (2.9 ng/Pa x s x sq. m).
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      b. Stego Industries, LLC StegoWrap 15 mil
      c. Or approved equal.

B. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.

C. Vapor-Retarder Fasteners: Pancake-head, self-tapping steel drill screws; with fender washers.

D. Single-Component Nonsag Urethane Sealant: ASTM C 920, Type I, Grade NS, Class 25, Use NT related to exposure, and Use O related to vapor-barrier-related substrates.
E. Adhesive for Vapor Retarders: Product recommended by vapor-retarder manufacturer and has demonstrated capability to bond vapor retarders securely to substrates indicated.

F. Foil Type Wall Vapor Barriers: Foil faced, scrim-reinforced kraft Vapor Barrier material, ASTM C1136, Type II, IV; with 0.0003 inch Aluminum Foil face, 0.0001 inch Elastomeric Polymer Barrier Coating, Tri-directional fiberglass reinforcing, flame resistant adhesive and 0.01 lb. / sq. ft. Natural Kraft backing. Product shall be R-3035 Foil Scrim / Kraft as manufactured by Lamteco Corporation or approved equal.

2.04 INSULATION FASTENERS

A. Adhesively Attached, Spindle-Type Anchors: Plate welded to projecting spindle; capable of holding insulation of specified thickness securely in position indicated with self-locking washer in place.
   1. Plate: Perforated, galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.
   2. Spindle: Copper-coated, low-carbon steel; fully annealed; 0.105 inch in diameter; length to suit depth of insulation indicated.

B. Insulation-Retaining Washers: Self-locking washers formed from 0.016 inch thick galvanized-steel sheet, with beveled edge for increased stiffness, sized as required to hold insulation securely in place, but not less than 1-1/2 inches square or in diameter.
   1. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in the following locations:
      a. Ceiling plenums.

C. Insulation Standoff: Spacer fabricated from galvanized mild-steel sheet for fitting over spindle of insulation anchor to maintain air space of 1 inch between face of insulation and substrate to which anchor is attached.

D. Anchor Adhesive: Product with demonstrated capability to bond insulation anchors securely to substrates indicated without damaging insulation, fasteners, and substrates.

PART 3 - EXECUTION

3.01 PREPARATION

A. Clean substrates of substances that are harmful to insulation or vapor retarders, including removing projections capable of puncturing vapor retarders, or that interfere with insulation attachment.

3.02 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications indicated.

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. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
D. Provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.03 INSTALLATION OF BELOW-GRADE INSULATION

A. On vertical surfaces, set insulation units using manufacturer's recommended adhesive according to manufacturer's written instructions.
   1. If not otherwise indicated, extend insulation a minimum of 24 inches (610 mm) below exterior grade line.

B. On horizontal surfaces, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.
   1. If not otherwise indicated, extend insulation a minimum of 48 inches (1220 mm) in from exterior walls.

3.04 INSTALLATION OF INSULATION FOR FRAME CONSTRUCTION

A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

B. Glass-Fiber or Mineral-Wool Blanket Insulation: Install in cavities formed by framing members according to the following requirements:
   1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
   2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
   3. Maintain 3-inch clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
   4. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.
   5. Vapor-RETARDER-FACED Blankets: Tape joints and ruptures in vapor-retarder facings, and seal each continuous area of insulation to ensure airtight installation.
      a. Exterior Walls: Set units with facing placed toward interior of construction.
      b. Interior Walls: Set units with facing placed toward areas of high humidity.

C. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:
   1. Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.

3.05 INSTALLATION OF INSULATION FOR CONCRETE SUBSTRATES

A. Install board insulation on concrete substrates by adhesively attached, spindle-type insulation anchors as follows:
   1. Fasten insulation anchors to concrete substrates with insulation anchor adhesive according to anchor manufacturer's written instructions. Space anchors according to insulation manufacturer's written instructions for insulation type, thickness, and application indicated.
SECTION 072100 - THERMAL INSULATION

2. Apply insulation standoffs to each spindle to create cavity width indicated between concrete substrate and insulation.
3. After adhesive has dried, install board insulation by pressing insulation into position over spindles and securing it tightly in place with insulation-retaining washers, taking care not to compress insulation below indicated thickness.
4. Where insulation will not be covered by other building materials, apply capped washers to tips of spindles.

3.06 INSTALLATION OF VAPOR RETARDERS

A. Place vapor retarders on side of construction indicated on Drawings. Extend vapor retarders to extremities of areas to protect from vapor transmission. Secure vapor retarders in place with adhesives or other anchorage system as indicated. Extend vapor retarders to cover miscellaneous voids in insulated substrates, including those filled with loose-fiber insulation.

B. Seal joints caused by pipes, conduits, electrical boxes, and similar items penetrating vapor retarders with vapor-retarder tape to create an airtight seal between penetrating objects and vapor retarders.

C. Repair tears or punctures in vapor retarders immediately before concealment by other work. Cover with vapor-retarder tape or another layer of vapor retarders.

3.07 CLEANING

A. Progress Cleaning: Perform cleanup as work progresses

B. Final Cleaning: Upon completion, remove surplus materials, rubbish, tools and equipment in accordance with Division 01 Specifications.

C. Waste Management:
   1. Coordinate recycling of waste materials with Division 01 Specifications.

3.08 PROTECTION

A. Protect installed insulation and vapor retarders from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100
PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:
1. Fleece Backed ethylene-propylene-diene-monomer (EPDM) roofing system.
2. Roof edge systems.
3. Vapor retarder.
4. Roof insulation.

1.03 DEFINITIONS

A. Roofing Terminology: Definitions in ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.

1.04 SUBSTITUTIONS / OR EQUALS

A. Substitutions or Equals for the roofing material manufacturer and items listed in this specification shall be submitted in conformance with Division 1 and as otherwise modified by the following:
1. A proposed Substitution/or Equal submission package must be submitted to the Architect no later than (10) ten business days prior to the bid date. Otherwise, any Substitution/or Equal other than the manufacturer specified will not be considered.
2. Submittal to Architect must include:
a. Identification of Project - Project Name;
b. Name of Submitting Bidder;
c. Telephone and Email address of Submitting Bidder;
d. Manufacturer's Name of Proposed or Equal/Substitution;
e. Model, line or material type;
f. Equivalent line by line item comparison for each item listed in the materials section of this specification, including each of the optional accessories. Note: Each proposed item must have proposed manufacturer and model/product numbers.
g. Addresses of two locations within 30 miles of the proposed site, where the proposed Substitution/or Equal manufacturer has installed their similar roofing product and name and telephone number of a contact person to be able to arrange a site visit.
h. A copy of the final signed warranty signed and issued by the manufacturer for the two projects provided.
3. Partial and/or Failure to follow any of the procedures outlined in division 1 or above may subject the entire submission for rejection.
4. Incomplete submissions may not be reviewed.
5. Substitution/ or Equals if found acceptable will be approved via addenda, which will be issued to all bidder's.
6. In order to include an approved Substitution/or Equal in the bid, the bidder must acknowledge on the bidders bid form that the bidder intends to provide the approved Substitution/or Equal and the bidder shall also list the name of the approved Substitution/or Equal manufacturer as well on the bidders bid form. Failure of the bidder to express their
intent to use the approved Substitution/or Equal as part of the bid will exclude the bidder from being able to utilize another Manufacturer from the one specified.

7. If a bidder uses a Substitution/or Equal, the bidder will take responsibility to pay for the re-engineering and coordination of all other items that are to be provided that have been defined in the Contract Documents as additional items to the roofing system, including but not limited to all deck preparation/modifications, additional flashings or modification to existing roof drains.

1.05 PREINSTALLATION MEETINGS

A. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site.
   1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
   2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
   3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   4. Review the use and staging of hoisting equipment required for the project including safety, OSHA regulations pertaining to operation and use of this equipment.
   5. Review Contractor's (and their Subcontractor's) responsibility to comply with OSHA regulations, requirements for provision and implementation of safety equipment and regulations. Additionally, Contractor shall keep on-site at all times a minimum of three complete additional safety units (i.e.: harnesses, rigging gear, hardhats, safety vests, etc.) for use by site visitors requiring access to the work.
   6. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
   7. Review structural loading limitations of roof deck during and after roofing.
   8. Review the location of any fresh-air intakes for the building with the building owner which may have to be covered or re-directed to maintain intakes during roofing operations.
   9. Review base flashings, special roofing details, roof drainage, roof penetrations; raising and/or replacement of equipment curbs, disconnection and re-connection of mechanical roof mounted equipment; and condition of other construction that affects roofing system.
   10. Review governing regulations and requirements for insurance and certificates if applicable.
   11. Review temporary protection requirements including but not limited to safety lines, roof barriers, walkway protections as required by OSHA during and after roofing installations.
   12. Review roof installation observations during construction; notifications and repair procedures after roofing installation with the manufacturer's field representative.

1.06 ACTION SUBMITTALS

A. Submittals shall be made in accordance with Section 013300 - SUBMITTALS.

B. Product Data: For each type of product.

C. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work, including:
   1. Base flashings and membrane terminations including laps, seam layout, direction of laps and flashing details.
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GOSR Work Order Number: NTF-1-DES
Edgewater Park Volunteer Fire Department — Storm Hardening and Abatement

SECTION 075323.13 - ETHYLENE-PROPYLENE-DIENE-MONOMER (EPDM)
ROOFING - FLEECEBACK

2. Tapered insulation, including slopes.
3. Roof plan showing orientation of steel roof deck and orientation of roofing and fastening spacing and patterns for mechanically fastened roofing.
4. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.

D. Samples for Verification: For the following products:
   1. Membrane roofing, of color required, 12 inch x 12 inch.
   2. Insulation Board - 12" x 12" sample.
   3. Cover Board - 12 inch x 12 inch.
   4. Walkway pads or rolls, of color required.

E. Manufacturers complete installation Instructions.

F. MSDS Sheets for all materials.

1.07 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and manufacturer.

B. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
   1. Submit evidence of complying with performance requirements.

C. Product Test Reports: For components of roofing system, tests performed by manufacturer and witnessed by a qualified testing agency.

D. Research/Evaluation Reports: For components of roofing system, from ICC-ES.

E. Sample Warranties: For manufacturer's special warranties.

1.08 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing system to include in maintenance manuals.

1.09 QUALITY ASSURANCE

A. Perform work in accordance with NRCA Roofing and Waterproofing Manual and manufacturer's instructions.

B. Single Source Responsibility: Roofing system materials and components shall be supplied and warranted by membrane manufacturer for specified roofing system and specified membrane manufacturer's warranty and shall be in compliance with specified regulatory requirements.

C. Regulatory Requirements for Roof Assembly:
   1. Comply with Factory Mutual System Approval Guide to provide FMRC-Approved roof assembly meeting Class IA- 90 (FM Standard 4470) requirements for fire resistance and wind uplift in accordance with FM Loss Prevention Data Sheets 1-28 and 1-29.
   2. Underwriters Laboratories, Inc. (UL): Class A Fire Hazard Classification
   3. Conform to applicable code(s) for roof assembly fire hazard requirements.
   4. Conform to loading requirements indicated in ASCE 7 for applicable building location, exposure and use.
   5. Factory Mutual (FM) 1-90 Compliance/ Roof Assembly.

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D. Qualifications.
   1. Manufacturer: Company specializing in manufacturing the products specified in this
      section with 10 years documented experience.
   2. Applicator: Company specializing in performing the work of this section with 5 years
      documented experience. Installer shall be a qualified firm that is approved, authorized, or
      licensed by roofing system manufacturer to install manufacturer's product and that is
      eligible to receive manufacturer's special warranty.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled
   with manufacturer's name, product brand name and type, date of manufacture, approval or
   listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location
   and within the temperature range required by roofing system manufacturer. Protect stored
   liquid material from direct sunlight.
   1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf
      life.
   2. All curable materials must be stored between 60° F and 80°F.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight,
   moisture, soiling, and other sources. Store in a dry location. Comply with insulation
   manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials, and place equipment in a manner to avoid permanent
   deflection of deck.

E. Protect adjacent materials and surfaces against damage from roofing work. Do not store
   materials on previously completed roofing.

1.11 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather
   conditions permit roofing system to be installed according to manufacturer's written instructions
   and warranty requirements.

1.12 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that
   fail in materials or workmanship within specified warranty period.
   1. Special warranty includes membrane roofing, base flashings, roof insulation, fasteners,
      cover boards, substrate board, roofing accessories, and other components of roofing
      system.
   2. Warranty Period: 30 years from date of Substantial Completion with no dollar limitation
      (NDL) on the cost or quantity of repairs. Pro-rated roofing warranties will not be accepted.
   3. The warranty shall include coverage for wind speed with peak gusts of 120 mph measured
      at 30 feet above ground level. Certification is required with bid submittal indicating the
      manufacturer has reviewed and agreed to such wind coverage.
4. Warranty shall also provide coverage for roof leakage caused by hail up to and including 2 inch in diameter. An additional 1 inch shall be provided for roofs installed with the flexible FAST system.
5. Materials and Workmanship for the following items shall be included in the manufacturer's warranty:
   a. Membranes.
   b. Flashings, including metal flashings and accessories supplied by roofing membrane manufacturer.
   c. Insulation.
   d. Fasteners and adhesives.
   e. Accessories.
   f. Roof drains.
   g. Roof Edge and coping systems.
6. The warranty deliverables shall include the following:
   a. Original of the warranty with original signature of a roofing manufacturer's company official authorized to sign the warranty.
   b. An additional three copies of the signed warranty noted above.
   c. Record set of as-built roofing drawings.
   d. Final Roof Inspection Report by the manufacturer's authorized Field Representative.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Source Limitations: Obtain components including roof insulation for roofing system from manufacturer approved by membrane roofing manufacturer.

2.02 PERFORMANCE REQUIREMENTS

A. General Performance: Installed roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing and base flashings shall remain watertight.
   1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G155.
   2. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.

B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.

C. Roofing System Design: Tested by a qualified testing agency to resist the following uplift pressures:
   1. Corner Uplift Pressure: 60 lbf/sq. ft. (kPa/sq. m).
   2. Perimeter Uplift Pressure: 38 lbf/sq. ft. (kPa/sq. m).
   3. Field-of-Roof Uplift Pressure: 23 lbf/sq. ft. (kPa/sq. m).

D. Energy Star Listing: Roofing system shall be listed on the DOE's ENERGY STAR "Roof Products Qualified Product List" for low-slope roof products.
NY Rising – Governor’s Office of Storm Recovery  
GOSR Work Order Number: NTF-1-DES  
Edgewater Park Volunteer Fire Department — Storm Hardening and Abatement

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ROOFING - FLEECEBACK

E. Energy Performance: Roofing system shall have an initial solar reflectance index of not less than 0.70 and an emissivity of not less than 0.75 when tested according to CRRC-1.

F. Exterior Fire-Test Exposure: ASTM E108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

G. Fire-Resistance Ratings: Comply with fire-resistance-rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.

2.03 EPDM ROOFING

A. Fleece-Backed EPDM: ASTM D 4637, Type III, non-reinforced, uniform, flexible EPDM sheet, laminated to a nonwoven polyester fabric backing except at selvages. Sheets shall be ten foot wide in maximum lengths provided by the manufacturer.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
   a. Carlisle SynTec Incorporated.
   b. or approved equal.

2. Membrane thickness: 60 mils or 90 mils.


4. Exposed Face Color: Black.

2.04 AUXILIARY ROOFING MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing.

1. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the following limits for VOC content:
   a. Plastic Foam Adhesives: 50 g/L.
   b. Gypsum Board and Panel Adhesives: 50 g/L.
   c. Multipurpose Construction Adhesives: 70 g/L.
   d. Fiberglass Adhesives: 80 g/L.
   e. Single-Ply Roof Membrane Adhesives: 250 g/L.
   f. Single-Ply Roof Membrane Sealants: 450 g/L.
   g. Non-membrane Roof Sealants: 300 g/L.
   h. Sealant Primers for Nonporous Substrates: 250 g/L.
   i. Sealant Primers for Porous Substrates: 775 g/L.
   j. Other Adhesives and Sealants: 250 g/L.

B. Protection Sheet: Epichlorohydrin or neoprene non reinforced flexible sheet, 55 to 60-mil thick, recommended by EPDM manufacturer for resistance to hydrocarbons, non-aromatic solvents, grease, and oil.

C. Bonding Adhesive, splice cleaners, splice cement and splice tape: Manufacturer’s standard.

D. Prefabricated Control or Expansion Joint Flashing: Type approved for the total roof system by roofing manufacturer.
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E. Low-Rise, Urethane, Fabric-Backed Membrane Adhesive: Roof system manufacturer's flexible FAST spray-applied, low-rise, two-component urethane adhesive formulated for compatibility and use with fleece-backed membrane roofing.

F. Seaming Material: Manufacturer's standard, synthetic-rubber polymer primer and 6 inch wide minimum, butyl splice tape with release film.

G. Lap Sealant: Manufacturer's standard, single-component sealant, colored to match membrane roofing.

H. Molded Pipe Flashings inside and outside corner flashing: as recommended by membrane manufacturer.

I. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.

J. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.

K. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, molded pipe boot flashings, preformed inside and outside corner sheet flashings, reinforced EPDM securement strips, T-joint covers, in-seam sealants, termination reglets, cover strips, and other accessories.
   1. Provide white flashing accessories for white EPDM membrane roofing.

L. Walkway Pads: Protective surfacing for roof traffic shall be non-slip textured, pressure-sensitive walkway pads (with Factory-Applied Tape on the underside of the walkway) adhered to the membrane surface in conjunction with primer. Color to match roofing.

M. Roof edge and coping system materials: SecurEdge 2000 snap on coping system, stainless steel anchor clips, .050” thick aluminum cover. Cover shall be included in roof system warranty. Kynar finish shall be as selected by Architect. Provide complete system with concealed cover plate, extenders, Factory-fabricated corners, end caps and fasteners.

2.05 SUBSTRATE BOARDS

A. Substrate Board: ASTM C1278/C1278M, cellulosic-fiber-reinforced, water-resistant gypsum substrate, 5/8 inch (16 mm) thick.
   1. Products: Subject to compliance with requirements, provide the following:
      a. USG Corporation; Securock Gypsum-Fiber Roof Board.
      b. Or approved equal.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening substrate panel to roof deck.

2.06 VAPOR RETARDER

A. Self-Adhering-Sheet Vapor Retarder: ASTM D1970/D1970M, polyethylene film laminated to layer of rubberized asphalt adhesive, minimum 40-mil total thickness; maximum permeance rating of 0.1 perm; cold applied, with slip-resisting surface and release paper backing. Provide primer when recommended by vapor-retarder manufacturer.
2.07 ROOF INSULATION

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

B. Polyisocyanurate Board Insulation: ASTM C1289, Type II, Class 1, Grade 3, felt or glass-fiber mat facer on both major surfaces.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
      b. Carlisle SynTec Incorporated.
      c. Hunter Panels

2.08 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with roofing.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer.

C. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:
   1. Modified asphaltic, asbestos-free, cold-applied adhesive.
   2. Bead-applied, low-rise, one-component or multicomponent urethane adhesive.
   3. Full-spread spray-applied, low-rise, two-component urethane adhesive.

D. Cover Board: ASTM C1278/C1278M, cellulosic-fiber reinforced, water-resistant gypsum substrate, 5/8 inch thick.
   1. Products: Subject to compliance with requirements, provide the following:
      a. USG Corporation; Securock Gypsum-Fiber Roof Board.

E. Protection Mat: Woven or nonwoven polypropylene, polyolefin, or polyester fabric, water permeable and resistant to UV degradation, type and weight as recommended by roofing system manufacturer for application.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work:
   1. Verify that roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.
   2. Verify that perimeter wood blocking, curbs, and nailers are securely anchored to roof deck at roof perimeters, penetrations and terminations in accordance with Factory Mutual 1-49 requirements and that nailers match thicknesses of insulation.
B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

3.03 ROOFING INSTALLATION, GENERAL

A. Install roofing system according to roofing system manufacturer's written instructions.

B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.04 SUBSTRATE BOARD INSTALLATION

A. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together.

1. Fasten substrate board to top flanges of steel deck to resist uplift pressure at corners, perimeter, and field of roof according to roofing system manufacturers' written instructions.

3.05 VAPOR-RETARDER INSTALLATION

A. Self-Adhering-Sheet Vapor Retarder: Prime substrate if required by manufacturer. Install self-adhering-sheet vapor retarder over area to receive vapor retarder, side and end lapping each sheet a minimum of 3-1/2 inches and 6 inches, respectively. Seal laps by rolling.

B. Completely seal vapor retarder at terminations, obstructions, and penetrations to prevent air movement into roofing system.

3.06 INSULATION INSTALLATION

A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Install tapered insulation under area of roofing to conform to slopes indicated.

D. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.
1. Where installing composite and non-composite insulation in two or more layers, install non-composite board insulation for bottom layer and intermediate layers, if applicable, and install composite board insulation for top layer.

E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.
   1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.

G. Mechanically Fastened and Adhered Insulation: Install first layer of insulation to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.
   1. Fasten first layer of insulation to resist uplift pressure at corners, perimeter, and field of roof.
   2. Set each subsequent layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
   3. Set each subsequent layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

H. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction. Loosely butt cover boards together and fasten to roof deck.
   1. Fasten cover boards according to requirements in FM Global's "RoofNav" for specified Windstorm Resistance Classification.
   2. Fasten cover boards to resist uplift pressure at corners, perimeter, and field of roof.

3.07 ADHERED MEMBRANE ROOFING INSTALLATION

A. Adhere fabric-backed roofing over area to receive roofing according to membrane roofing system manufacturer's written instructions. Unroll membrane roofing and allow membrane to relax before installing.

B. Start installation of roofing in presence of roofing system manufacturer's technical personnel.

C. Accurately align roofing, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

D. Bonding Adhesive: Apply to substrate and underside of roofing at rate required by manufacturer, and allow to partially dry before installing roofing. Do not apply to splice area of roofing.

E. In addition to adhering, mechanically fasten roofing securely at terminations, penetrations, and perimeters.

F. Apply roofing with side laps shingled with slope of roof deck where possible.

G. Tape Seam Installation: Clean and prime both faces of splice areas, apply splice tape, and firmly roll side and end laps of overlapping roofing according to manufacturer's written...
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instructions to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of roofing terminations.

H. Repair tears, voids, and lapped seams in roofing that do not comply with requirements.

I. Spread sealant or mastic bed over deck-drain flange at roof drains, and securely seal membrane roofing in place with clamping ring.

J. Adhere protection sheet over membrane roofing at locations indicated.

3.08 WALKWAY INSTALLATION

A. Flexible Walkways: Install walkway products in locations indicated. Adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer’s written instructions.

3.09 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to inspect substrate conditions, surface preparation, membrane application, flashings, protection, and drainage components, and to furnish reports to Architect.

B. Manufacturer’s Field Services: The manufacturer’s authorized Field Representative and Roofing Quality Control Inspector shall provide the following:
   1. Attend and conduct Pre-installation Meeting.
   2. Perform preparatory, initial, follow-up and final inspections for roof insulation and roofing system.
   3. Prepare and submit inspection reports for each inspection made.

C. Upon completion of the installation the manufacturer’s authorized Field Representative shall conduct an on-site inspection in the presence of the Architect/Engineer to insure that the installation has been installed in accordance with the manufacturer’s specifications.

D. Flood Testing: Flood test each roofing area for leaks, according to recommendations in ASTM D 5957, after completing roofing and flashing but before overlying construction is placed. Install temporary containment assemblies, plug or dam drains, and flood with potable water.
   1. Flood to an average depth of 2-1/2 inches with a minimum depth of 1 inch and not exceeding a depth of 4 inches. Maintain 2 inches of clearance from top of base flashing.
   2. Flood each area for 24 hours.
   3. After flood testing, repair leaks, repeat flood tests, and make further repairs until roofing and flashing installations are watertight.

E. Final Roof Inspection: Arrange for roofing system manufacturer’s technical personnel to inspect roofing installation on completion.

F. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.

G. Additional testing and inspecting, at Contractor’s expense, will be performed to determine if replaced or additional work complies with specified requirements.
3.10 PROTECTING AND CLEANING

A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates, and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 075323.13
**Instructions:** The Consultant should include the Appendix A below at the end of the roof membrane specification Section. The Consultant shall be responsible for cross-referencing the appendix in the appropriate paragraphs of the applicable specification sections.

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**APPENDIX A**

**WARRANTY AND MAINTENANCE AGREEMENT**

**TOTAL ROOF SYSTEM WARRANTY**

Warranty #: ___________________________  Square Footage: _________

GOSR JOB #: __________________________

Building Name: ________________________

Facility: ____________________________

Warranty Period: Twenty years Beginning MM/DD/YYYY

Roofing Contractor & Contact: ________________________________

Roofing Contractor Address: ________________________________

Roofing Contractor Telephone — Fax: _________________________

Roofing Contractor Email Address: __________________________

Roofing Manufacturer & Contact: ____________________________

Roofing Manufacturer Address: ______________________________

Roofing Manufacturer Telephone — Fax: ______________________

Roofing Manufacturer Email Address: _________________________

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**TERMS, CONDITIONS AND LIMITATIONS**

A. Upon completion of the Roofing System and as a condition of its acceptance, deliver to the Owner two (2) copies of the following "Warranty and Maintenance Agreement", signed by the Contractor and the Roofing Manufacturer. This is a total system warranty, covering all roofing components provided by the Contractor or Roofing Manufacturer, including, but not limited to, membrane, fasteners, asphalt, insulation, insulation adhesive, cover board, membrane flashing, metal coping, metal cap flashing and/or gravel stop assemblies.

B. Upon execution of this document, the undersigned Contractor hereby proposes and agrees, for a period of two (2) years after final acceptance of the roof, to make immediate repairs as required to stop leaks or correct defects in the roofing system. Said repairs shall be made within seventy-two (72) hours of the receipt of a notice from the Owner by telephone, fax, email or letter. Subject to provisions established in Paragraph E below, the Contractor further agrees to make such repairs without reference to or consideration of the cause or nature of such leaks or defects. (See Surety Bond section below for additional requirements.)
C. Upon execution of this document, the undersigned Roofing Manufacturer hereby proposes and agrees, for a period of twenty (20) years after final acceptance of the roof, to make immediate repairs as required to stop leaks or correct defects in the roofing system. Said repairs shall be made within seventy-two (72) hours of the receipt of a notice from the Owner by telephone, fax, email or letter. Subject to provisions established in Paragraph E below, the Roofing Manufacturer further agrees to make such repairs without reference to or consideration of the cause or nature of such leaks or defects.

C Five (5) consecutive annual inspections, commencing one (1) year after acceptance of the work by the Owner, shall be made by the Manufacturer of the roofing system. The Manufacturer shall be responsible for contacting the Owner and scheduling the annual inspections. The Manufacturer shall submit a written report, within ten (10) days of the inspection, to the Owner, which shall include, but not be limited to, any indication of damage, deterioration, unusual wear, weathering effects, or no apparent defects at all. Further, the Manufacturer shall arrange and pay for the immediate repairs needed to stop any potential leaks or correct any defects discovered during the annual inspections, subject to provisions established in Paragraph E below.

E. Repairs required within the stated period will be provided without cost to the Owner, except that repairs required consequent to an Act of God, abuse, alteration, or failure of the substrata or supporting structure (other than caused by defects in the roofing system) will be paid for by the Owner upon completion of the repair in each instance. Any determination on whether the repairs are the Owner's responsibility will be made by an independent third party.

F Repairs that are the Owner's responsibility to pay shall be invoiced to the Owner at the prevailing wage rates, and shall include an itemized breakdown of quantities plus unit cost for labor and materials, and shall include not more than twenty (20) percent markup for overhead and profit.

G Unless otherwise specified, the roofing system shall be warranted against failure due to wind speeds up to and including seventy-two (72) miles per hour, regardless of building height, as measured at the closest office of the National Weather Service.

H. This Warranty and Maintenance Agreement, and the enforcement of its provisions, shall not deprive the Owner of any action, right, or remedy otherwise available to them.
SURETY BOND

The Contractor shall, as principal, furnish to the Owner before final payment a surety bond guaranteeing the installation of the total roofing system, including all membrane, fasteners, asphalt, insulation, insulation adhesive, cover board, membrane flashing, metal coping, metal cap flashing and/or gravel stop assemblies installed in connection with same, free from defects as to the materials, workmanship, leaks, and damage as a result of leaking. Guarantee shall be for a period of two (2) years from the date of final acceptance of the roof. Said bond shall be in the amount of fifty (50) percent of the cost of the original bid amount (roof system installation and associated removals) as determined by the Owner from a detailed estimate or other information available.

ROOFING CONTRACTOR
By: 
Authorized Signature ________________
Title ________________

ROOFING MANUFACTURER
By: 
Authorized Signature ________________
Title ________________
PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:
   1. Copings and splice plates.
   2. Drip edges.
   3. Base and Counter flashing.

1.03 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.

1.04 REFERENCES:


1.05 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.

B. Shop Drawings: For sheet metal flashing and trim.
   1. Detail fabrication and installation layouts, details. Distinguish between shop- and field-assembled work.
   2. Include identification of material, thickness, weight, and finish for each item and location in Project.
   3. Include details for forming, including profiles, shapes, seams, and dimensions.
   4. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
   5. Include details of termination points and assemblies.
   6. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.
   7. Include details of roof-penetration flashing.
   8. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, and counterflashings as applicable.
9. Include details of special conditions.
10. Include details of through wall scuppers including section details, dimensions of scupper openings and height above finished roof surface, edge sealing details, interface and sealing with roof membrane system, counterflashing and exposed exterior fascia conditions.
11. Include details of connections to adjoining work.

C. Samples for Verification: For each type of exposed finish.

1.06 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

B. Product Certificates: For each type of coping, scupper, roof edge and flashing required to complete the roofing system. All sheet metal shall be SPRI ES-1 tested and FM approved for this project.

C. Product Test Reports: For each product, for tests performed by a qualified testing agency.

1.07 QUALITY ASSURANCE

A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.
   1. For copings and roof edge flashings that are SPRI ES-1 tested and FM Approvals approved, shop shall be listed as able to fabricate required details as tested and approved.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.

C. Perform work in accordance with SMACNA (ASMM), CDA A4050, and approved manufacturers requirements and standard details, except as otherwise indicated.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.09 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.
   1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
      a. Color fading more than 5 Hunter units when tested according to ASTM D2244.
      b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
      c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
   2. Finish Warranty Period: 20 years from date of Substantial Completion.

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B. Metal Copings, roof edges, counterflashing, and other components incorporated or in contact with the Roofing System shall be pre-approved by and made integral to the 20-year Total Roofing System warranty specified in Division 07. Shop drawings and components shall be reviewed and approved by the Roofing manufacturer prior to submittal to the architect for approval. Submit a letter signed by a current representative of the manufacturer on Roofing manufacturer letterhead, attesting to this approval and warranty acceptability. Submit this certification letter as part of the Shop Drawing submittals for this section.

PART 2 - PRODUCTS

2.01 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" SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated or required by the approved roofing manufacturer responsible for providing the Total System Warranty for the roof system.

C. FM Approvals Listing: Manufacture and install copings, roof edge flashings that are listed in FM Approvals' "RoofNav" and approved for windstorm classification, Class 1-180 Identify materials with name of fabricator and design approved by FM Approvals.

D. SPRI Wind Design Standard: Manufacture and install Metal Copings, Gravel Stops, Scuppers, Roof edges, Counterflashing, and other components of roof metal work tested according to SPRI ES-1 and capable of resisting the required design pressure.

E. 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

2.02 SHEET METALS

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

B. Aluminum Sheet: ASTM B209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required; with smooth, flat surface.
1. Thickness: 0.040 inch minimum or as indicated on the drawings.
2. Exposed Coil-Coated Finish:
   a. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers’ written instructions.
   b. Modified Silicone Polyester Coating: Pigmented Organic Coating System, AAMA 2603; baked enamel finish system.
c. Color: as selected by the Architect from the manufacturer’s full range of color offerings.

3. Anodized Finishes:
   a. Color Anodized Finish: AAMA 611 AA-M12C22A42/44 Class I integrally or electrolytically colored anodic coating not less than 0.7 mils (0.018 mm) thick.

4. Color: as selected by the Architect from the manufacturer’s full range of color offerings.

5. Concealed Finish: Pretreat with manufacturer’s standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil.

C. Pre-Finished Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24 gage, (0.0239) inch thick base metal, shop pre-coated with PVDF coating.
   2. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605, multiple coat, thermally cured fluoropolymer finish system.
   3. Color: as selected by the Architect from the manufacturer’s full range of color offerings.

D. Stainless Steel: ASTM A666, Type 304, soft temper, 28 gauge thick; smooth No. 4 finish.

E. Terne Coated Steel: 28 gage (0.0149 inch) thick copper bearing carbon steel core material with 0.092 lb/sq ft terne alloy coating on both sides of core metal.

F. Terne Coated Stainless Steel: 28 gage (0.0156 inch) ASTM A666 Type 304 core material with 0.092 lb/sq ft terne alloy coating on both sides of core metal.

2.03 UNDERLAYMENT MATERIALS

A. Felt: ASTM D226/D226M, Type II (No. 30), asphalt-saturated organic felt; non-perforated.

B. Self-Adhering, High-Temperature Sheet: Minimum 30 mils thick, consisting of a slip-resistant polyethylene- or polypropylene-film top surface laminated to a layer of butyl- or SBS-modified asphalt adhesive, with release-paper backing; specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer according to written recommendations of underlayment manufacturer.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. Grace Construction Products, a unit of W. R. Grace & Co. - Conn; Grace Ice and Water Shield HT.
      b. Henry Company; Blueskin PE200 HT.

C. Slip Sheet: Rosin-sized building paper, 3 lb/100 sq. ft. minimum.

2.04 MISCELLANEOUS MATERIALS

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 or manufactured item unless otherwise indicated.
B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.
   1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
      a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
      b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
   2. Fasteners for Copper Sheet: Copper, hardware bronze or passivated Series 300 stainless steel.
   3. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.

C. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.

D. Elastomeric Sealant: ASTM C920, elastomeric polyurethane silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

E. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

2.05 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
   1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
   2. Obtain field measurements for accurate fit before shop fabrication.
   3. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
   4. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.
   1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.

D. 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.
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E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, non-corrosive metal.

F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard and by FM Global Property Loss Prevention Data Sheet 1-49 for application, but not less than thickness of metal being secured.

G. Seams: Fabricate non-moving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.

2.06 WALL SHEET METAL FABRICATIONS

A. Select material and gauge or weight from list below. Opening Flashings: Fabricate head, sill, jamb, and similar flashings to extend 6 inches beyond wall openings. Form head and sill flashing with 2-inch (50-mm-) high, end dams. Fabricate from the following materials:
   1. Copper: 16 oz./sq. ft.
   2. Aluminum: 0.032 inch thick. Finish color as selected by the Architect.
   3. Galvanized Steel: 22 gauge with PVDF Powder coat in color as selected by the Architect unless noted otherwise.
   4. Stainless Steel: 22 gauge

2.07 MISCELLANEOUS FLASHINGS - COORDINATED SHEET METAL FABRICATIONS

A. Equipment Support Flashing: Fabricate from the following materials:
   1. Stainless Steel: 0.018 (26 gauge) thick.
   2. Aluminum Sheet: 0.040 inch thick. Finish color as selected by the Architect.

2.08 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

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 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.

B. Apply slip sheet, wrinkle free, over underlayment before installing sheet metal flashing and trim.

3.03 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 solder, 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. Bend tabs over fasteners.
   4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
   5. Torch cutting of sheet metal flashing and trim is not permitted.
   6. 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 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.

D. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws.

E. 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 079200 - JOINT SEALANTS.

F. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to width of 1-1/2 inches; however, reduce pre-tinning where pre-tinned surface would show in completed work.
1. Do not solder aluminum sheet.
2. Do not use torches for soldering.
3. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.

3.04 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 FM Global Property Loss Prevention Data Sheet 1-49 for FM Approvals' listing for required windstorm classification.

C. 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.

D. 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.

3.05 WALL FLASHING INSTALLATION

A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

3.06 MISCELLANEOUS FLASHING INSTALLATION

A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with elastomeric sealant to equipment support member.
3.07 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed 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.

3.08 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder.

C. Clean off excess sealants.

D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended by sheet metal flashing and trim manufacturer. Maintain sheet metal flashing and trim in clean condition during construction.

E. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 076200
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SECTION 077123 - GUTTERS AND DOWNSPOUTS

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Pre-finished aluminum downspouts and accessories.

1.02 REFERENCES

1.03 SUBMITTALS
   A. Submit under provisions of Section 013300 - SUBMITTALS.
   B. Product Data: Provide data on prefabricated components.
   C. Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations and installation details.

1.04 REGULATORY REQUIREMENTS
   A. Conform to applicable code(s) for size and method of rain water discharge.

1.05 DELIVERY, STORAGE AND HANDLING
   A. Deliver, store, protect and handle products to site under provisions of Section 016500 - PRODUCT DELIVERY, STORAGE AND HANDLING.
   B. Stack preformed and prefinished material to prevent twisting, bending or abrasion, and to provide ventilation. Slope to drain.
   C. Prevent contact with materials during storage which may cause discoloration, staining or damage.

1.06 - COORDINATION
   A. Coordinate work under provisions of Section 013100 - PROJECT MANAGEMENT AND COORDINATION.

PART 2 PRODUCTS

2.01 MANUFACTURERS
   A. Gutters and Downspouts:
      1. ATAS International, Inc
      2. SAF Perimeter Systems, a division of Southern Aluminum Finishing Company, Inc
      3. Or approved equal
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SECTION 077123 - GUTTERS AND DOWNSPOUTS

2.02 MATERIALS

A. Aluminum: ASTM B209, 3003 alloy, H14 temper; 0.032 inch thickness or as indicated; mill finish interior, shop pre-coated Kynar 500 or Hylar 5000 finish, color to match existing structure.

2.03 COMPONENTS

A. Gutters: SMACNA style profile seamless, Style K, Size: 6 inch
B. Downspouts: SMACNA rectangular profile seamless 4 inch x 6 inch. Configure with soldered elbow offsets to provide minimal clearance to Canopy structure while providing allowance for concealed connectors.

2.04 ACCESSORIES

A. Anchorage Devices: Concealed Type recommended by manufacturer.
B. Gutter Supports: Hidden flanges screwed to fascia and interlocked / fastened to the top front edge of gutter.
C. Downspout Supports: Flat 1 1/4" min. width concealed straps matching leader profile and color.
D. End Caps, Elbows: Fabricate to gutter profile with factory soldered connections.
E. Fasteners: Aluminum finish exposed fasteners same as leader metal.
F. Leaf Screen: 10 gauge welded screen, galvanized after fabrication, sized to fit and cover entire length of gutter with gaps.
G. Primer: Zinc chromate type.
H. Protective Backing Paint: Bituminous.

2.05 FABRICATION

A. Form gutters and downspouts of profiles and sizes indicated in accordance with approved shop drawings.
B. Fabricate with required connection, expansion and splice pieces.
C. Form sections square in required profile, true and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints and at intervals required by the manufacturer.
D. Hem exposed edges of metal.
E. Solder shop formed metal joints. After soldering, remove flux. Wipe and wash solder joints clean. Weather seal all field joints and intersections with adjacent materials with color matching exterior vertical grade sealant.
F. Fabricate gutter and downspout accessories; seal watertight.
PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work.

3.02 INSTALLATION

A. Install gutters, downspouts and accessories in accordance with manufacturer's instructions and approved shop drawings.

B. Slope gutters 1/8 inch per foot minimum to leader locations.

C. Seal metal joints other than factory welded joints watertight.

D. Provide leader strap connections at 5'-0" maximum with a minimum of at least two connections per section.

E. All gutter hangers shall be installed and fastened at 30 inches o.c. maximum.

END OF SECTION 077123
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SECTION 078413 - PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and general requirements of GOSR Specification Sections, apply to this Section.

1.02 SUMMARY
A. Section Includes:
   1. Penetrations in fire-resistance-rated walls.

1.03 ACTION SUBMITTALS
A. Product Data: For each type of product specified.
B. Product Schedule: For each penetration firestopping system. Include location and design designation of qualified testing and inspecting agency.

1.04 FIELD QUALITY CONTROL
A. Quality Control: Field inspection and testing.
   1. Inspect the installed firestopping after application and curing for integrity, prior to its concealment.
   2. Ensure that actual thicknesses, densities, and bond strengths meet requirements for specified ratings.
   3. Re-inspect the installed firestopping for integrity of fire protection, after installation of subsequent work.
   4. Provide written inspection report and certification to the Architect, indicating installation meets or exceeds requirements of contract documents.

1.05 INFORMATIONAL SUBMITTALS
A. Qualification Data: For qualified Installer.
B. Installer Certificates: From Installer indicating penetration firestopping has been installed in compliance with requirements and manufacturer’s written recommendations.
C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for penetration firestopping.

1.06 QUALITY ASSURANCE
A. Installer Qualifications: A firm that has been approved by FM Global according to FM 4991, “Approval of Firestop Contractors,” or been evaluated by UL and found to comply with its “Qualified Firestop Contractor Program Requirements.”
B. Installer Qualifications: A firm experienced in installing penetration firestopping similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful performance. Qualifications include having the necessary experience, staff, and training to install manufacturer's products per specified requirements. Manufacturer’s willingness to sell its penetration firestopping products to Contractor or to Installer engaged by Contractor does not in itself confer qualification on buyer.
C. Fire-Test-Response Characteristics: Penetration firestopping shall comply with the following requirements:
   1. Penetration firestopping tests are performed by a qualified testing agency acceptable to authorities having jurisdiction.
   2. Penetration firestopping is identical to those tested per testing standard referenced in "Penetration Firestopping" Article. Provide rated systems complying with the following requirements:
      a. Penetration firestopping products bear classification marking of qualified testing and inspecting agency.
      b. Classification markings on penetration firestopping correspond to designations listed by the following:
         1) FM Global in its "Building Materials Approval Guide."
         2) UL Fire Resistance Directory.
            (a) Firestop Devices (XHJI)
            (b) Fire Resistance ratings (BXRH)
            (c) Through Penetration Firestop Systems (XHEZ)
            (d) Fill Voids or Cavity Materials (XHHW)
            (e) Forming Materials (XHKU)

D. Preinstallation Conference: Conduct conference at Project site.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials undamaged in manufacturer's clearly labeled, unopened containers, identified with brand, type, and UL label where applicable.

B. Coordinate delivery of materials with scheduled installation date to allow minimum storage time at job-site.

C. Store materials under cover and protect from weather and damage in compliance with manufacturer's requirements.

D. Comply with recommended procedures, precautions or remedies described in material safety data sheets as applicable.

E. Do not use damaged or expired materials.

1.08 PROJECT CONDITIONS

A. Environmental Limitations: Do not install penetration firestopping when ambient or substrate temperatures are outside limits permitted by penetration firestopping manufacturers or when substrates are wet because of rain, frost, condensation, or other causes.

B. Install and cure penetration firestopping per manufacturer's written instructions using natural means of ventilation's or, where this is inadequate, forced-air circulation.

1.09 COORDINATION

A. Do not use materials that contain flammable solvents.

B. Scheduling:
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SECTION 078413 - PENETRATION FIRESTOPPING

1. Schedule installation of Cast in Place firestop devices after completion of floor formwork, metal form deck, or composite deck but before placement of concrete.
2. Schedule installation of other firestopping materials after completion of penetrating item installation but prior to covering or concealing of openings.

C. Verify existing conditions and substrates before starting work. Correct unsatisfactory conditions before proceeding.

D. Weather Conditions: Do not proceed with installation of firestop materials when temperatures exceed the manufacturer's recommended limitations for installation printed on product label and product data sheet.

E. During installation, provide masking and drop cloths to prevent firestopping materials from contaminating any adjacent surfaces.

F. Coordinate construction of openings and penetrating items to ensure that penetration firestopping is installed according to specified requirements.

G. Coordinate sizing of sleeves, openings, core-drilled holes, Cast-in place sleeves or cut openings to accommodate penetration firestopping.

H. Coordinate construction of openings and penetrating items to ensure that penetration firestopping is installed according to specified requirements.

I. Coordinate sizing of sleeves, openings, core-drilled holes, Cast-in place sleeves or cut openings to accommodate penetration firestopping.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Hilti, Inc.
   2. 3M Fire Protection Products.
   4. USG Corporation.

2.02 PENETRATION FIRESTOPPING

A. Provide penetration firestopping that is produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.

B. Penetrations in Fire-Resistance-Rated Walls: Provide penetration firestopping with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
   1. Fire-resistance-rated walls include fire walls fire-barrier walls smoke-barrier walls and fire partitions.
   2. F-Rating: Not less than the fire-resistance rating of constructions penetrated.
C W-Rating: Provide penetration firestopping showing no evidence of water leakage when tested according to UL 1479.

D. Exposed Penetration Firestopping: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E84.

E. VOC Content: Penetration firestopping sealants and sealant primers shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
   1. Sealants: 250 g/L.
   2. Sealant Primers for Nonporous Substrates: 250 g/L.
   3. Sealant Primers for Porous Substrates: 775 g/L.

F. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping manufacturer and approved by qualified testing and inspecting agency for firestopping indicated.
   1. Permanent forming/damming/backing materials, including the following:
      a. Slag-wool-fiber or rock-wool-fiber insulation.
      b. Sealants used in combination with other forming/damming/backing materials to prevent leakage of fill materials in liquid state.
      c. Fire-rated form board.
      d. Fillers for sealants.
   2. Temporary forming materials.
   5. Steel sleeves.

G. Identification Labels:
   1. Furnished by fire stopping manufacturer of suitable material for permanent field identification of through-penetration firestops.
   2. Identify the following:
      a. Warning Wording
      b. Manufacturer Name.
      c. Product Catalog number.
      d. Tested System number.
      e. F-rating.
      f. T-rating, if applicable.
      g. Firestop Contractor name.
      h. Firestop Contractor Contact Number.
      i. Firestop Inspection Date & Inspector Initials.
   3. Field fabricated labels are not acceptable.

2.03 FILL MATERIALS

A. Sealants, caulking materials or foams for use with non-combustible items including items including steel pipe, copper pipe, rigid steel conduit and electrical metallic tubing (EMT), the following products are acceptable:
   1. Hilti FS-ONE MAX Intumescent Firestop Sealant.
   3. Hilti CP 620 Fire Foam
SECTION 078413 - PENETRATION FIRESTOPPING

4. Hilti CP 606 Flexible Firestop Sealant
5. Hilti CP 601s Elastomeric Firestop Sealant:

B. Sealants, caulking materials or foams for use with sheet metal ducts the following products are acceptable:
   1. Hilti FS-ONE MAX Intumescent Firestop Sealant.
   2. Hilti CP 606 Flexible Firestop Sealant
   3. Hilti CP 601s Elastomeric Firestop Sealant:

C Firestop Joint Spray: sprayable fire-rated mastic for deck flutes and joints where greater movement is expected:
   1. Hilti Firestop Joint Spray CFS-SP-WB.
   2. or approved equal

D. Mineral Wool plugs for filling steel deck flute and wall gap openings:
   1. Hilti CP 777 Friction Fit sized and cut to depth for deck flute openings as recommended by the manufacturer.
   2. Hilti CP 787 continuous filler strip for filling continuous gaps at top of walls.
   3. or approved equal

E. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.
   1. Hilti FS-ONE MAX Intumescent Firestop Sealant
   2. Hilti CP 620 Fire Foam
   3. Hilti CP 601s Elastomeric Firestop Sealant

F. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced elastomeric sheet bonded to galvanized-steel sheet.

G. Mortars: Prepackaged dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar.
   1. Acceptable materials are "BIO FIRESHIELD "Novasit K-10" or approved equal.

H. Pillows/Bags / Pads: Reusable heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents, and fire-retardant additives. Where exposed, cover openings with steel-reinforcing wire mesh to protect pillows/bags from being easily removed.
   1. Hilti CP 617 Firestop Putty Pad or approved equal.

I. Foams, intumescent sealants, or caulking materials for use with flexible cable or cable bundles, the following products are acceptable:
   1. Hilti FS-ONE MAX High Performance Intumescent Firestop sealant
   2. Hilti CP 620 Fire Foam
   3. Hilti CP 601s Elastomeric Firestop Sealant.
   4. Hilti CP 606 FS Flexible Firestop Sealant.

J. Sleeves: Re-penetrable cable management device for electrical and telecommunication cabling and cable bundles for use with appropriate Firestopping sealant, fill mortar, putty or other devices and materials. Concrete assemblies up to 3 hour and Gypsum Board assemblies up to 4 hour.
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1. Hilti CP 653 Speed Sleeve.
2. or approved equal.

K. Non-curing, re-penetrable intumescent putty or foam materials for use with flexible cable or cable bundles, the following products are acceptable:
   1. Hilti CP 618 Firestop Putty Stick
   2. Hilti CP 658T Firestop Plug.
   3. or approved equal.

L. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below:
   1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces, and nonsag formulation for openings in vertical and sloped surfaces, unless indicated firestopping limits use of nonsag grade for both opening conditions.

M. Non-curing, re-penetrable materials used for large openings and complex penetrations made to accommodate cable trays and bundles, multiple steel and copper pipes, electrical busways in raceways, the following products are acceptable.
   1. Hilti FS 657 Fire Block
   2. Hilti CP 675T Firestop Board./ Brick
   3. or approved equal.

N. Materials used for large openings and complex penetrations made to accommodate cable trays and bundles, multiple steel and copper pipes. electrical busways in raceways, the following products are acceptable:
   1. Hilti FS 637 Trowelable Firestop Compound.
   2. or approved equal.

O. Mineral Fiber Fire Safing insulation:
   1. Provide insulation as manufactured by USG INTERIORS, INC. Product “Thermafiber Safing”, CAFCO INDUSTRIES LTD., FIBREX INC. or approved equal. Density shall be 4 pcf with thickness to suit condition
      a. Provide 20 gauge minimum metal plate where required for fire safing support to comply with fire ratings
      b. Do not use fibrous safing insulation unless it is in conjunction with a compatible smoke seal as specified herein.

P. Mineral Wool
   1. Loose mineral wool, rated noncombustible when tested according to ASTM E136, free of asbestos and glass fiber, and suitable for stuffing into metal deck flutes to an in place density of 6 to 12 pcf.

2.04 MIXING

A. For those products requiring mixing before application, comply with penetration firestopping manufacturer’s written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.
PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Verification of Conditions: Examine areas and conditions under which Work is to be performed and identify conditions detrimental to proper or timely completion.

B. Surface Cleaning: Clean out openings immediately before installing penetration firestopping to comply with manufacturer's written instructions and with the following requirements:
   1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of penetration firestopping.
   2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with penetration firestopping. Remove loose particles remaining from cleaning operation.
   3. Remove laitance and form-release agents from concrete.

C. Priming: Prime substrates where recommended in writing by manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

D. Masking Tape: Use masking tape to prevent penetration firestopping from contacting adjoining surfaces that will remain exposed on completion of the Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove stains. Remove tape as soon as possible without disturbing firestopping seal with substrates.

3.03 INSTALLATION

A. General: Install penetration firestopping to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.

B. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
   1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestopping.

C. Install fill materials for firestopping by proven techniques to produce the following results:
   1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
   2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
   3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.
3.04 IDENTIFICATION

A. Identify penetration firestopping with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of firestopping edge so labels will be visible to anyone seeking to remove penetrating items or firestopping. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:

1. Identify the following:
   a. "WARNING - FIRESTOP MATERIAL - DO NOT DISTURB. NOTIFY BUILDING MANAGEMENT OF ANY DAMAGE”.
   b. Manufacturer Name: ____________________________
   c. Product Catalog number: ____________________________
   d. Tested System number: ____________________________
   e. F rating: ____________________________
   f. T rating, if applicable.
   g. Firestop Contractor name: ____________________________
   h. Firestop Contractor Contact Number: ____________________________
   i. Firestop Inspection Date & Initials: ____________________________
   j. T-ratings, if applicable.
   k. Firestop Contractor name.
   l. Firestop Contractor Contact Number.
   m. Firestop Inspection Date & Inspector Initials.

3.05 CLEANING AND PROTECTION

A. Clean off excess fill materials adjacent to openings as the Work progresses by methods and with cleaning materials that are approved in writing by penetration firestopping manufacturers and that do not damage materials in which openings occur.

B. Provide final protection and maintain conditions during and after installation that ensure that penetration firestopping is without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, immediately cut out and remove damaged or deteriorated penetration firestopping and install new materials to produce systems complying with specified requirements.

END OF SECTION 078413
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SECTION 08113.01 - INTERIOR HOLLOW METAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:
   1. Joints in or between fire-resistance-rated constructions.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.
B. Product Schedule: For each fire-resistive joint system. Include location and design designation of qualified testing agency.
   1. Where Project conditions require modification to a qualified testing agency's illustration for a particular fire-resistive joint system condition, submit illustration, with modifications marked, approved by fire-resistive joint system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

1.04 INFORMATIONAL SUBMITTALS

A. Installer Certificates: From Installer indicating fire-resistive joint systems have been installed in compliance with requirements and manufacturer's written recommendations.
B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for fire-resistive joint systems.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: A firm that has been approved by FM Global according to FM Global 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with UL's "Qualified Firestop Contractor Program Requirements."
B. Installer Qualifications: A firm experienced in installing fire-resistive joint systems similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful performance. Qualifications include having the necessary experience, staff, and training to install manufacturer's products per specified requirements. Manufacturer's willingness to sell its fire-resistive joint system products to Contractor or to Installer engaged by Contractor does not in itself confer qualification on buyer.
C. Fire-Test-Response Characteristics: Fire-resistive joint systems shall comply with the following requirements:
   1. Fire-resistive joint system tests are performed by a qualified testing agency acceptable to authorities having jurisdiction.
   2. Fire-resistive joint systems are identical to those tested per testing standard referenced in "Fire-Resistive Joint Systems" Article. Provide rated systems complying with the following requirements:
      a. Fire-resistive joint system products bear classification marking of qualified testing agency.
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b. Fire-resistive joint systems correspond to those indicated by reference to designations listed by the following:
   c. UL - “Fire Resistance Directory.”

1.06 PROJECT CONDITIONS

A. Environmental Limitations: Do not install fire-resistant joint systems when ambient or substrate temperatures are outside limits permitted by fire-resistant joint system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Install and cure fire-resistant joint systems per manufacturer's written instructions using natural means of ventilation or, where this is inadequate, forced-air circulation.

1.07 COORDINATION

A. Coordinate construction of joints to ensure that fire-resistant joint systems are installed according to specified requirements.

B. Coordinate sizing of joints to accommodate fire-resistant joint systems.

C. Notify Owner's testing agency at least seven days in advance of fire-resistant joint system installations; confirm dates and times on day preceding each series of installations.

PART 2 - PRODUCTS

2.01 FIRE-RESISTIVE JOINT SYSTEMS

A. Where required, provide fire-resistant joint systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assemblies in or between which fire-resistant joint systems are installed. Fire-resistant joint systems shall accommodate building movements without impairing their ability to resist the passage of fire and hot gases.

B. Joints in or between Fire-Resistance-Rated Construction: Provide fire-resistant joint systems with ratings determined per ASTM E 1966 or UL 2079:
   1. Joints include those installed in or between fire-resistance-rated walls floor or floor/ceiling assemblies and roofs or roof/ceiling assemblies.
   2. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of construction they will join.
   3. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. Hilti, Inc.
      b. 3M Fire Protection Products.
      c. Cemco - Cemco Hotrod Type-X.
      d. Or approved equal

C. Accessories: Provide components of fire-resistant joint systems, including primers and forming materials, that are needed to install fill materials and to maintain ratings required. Use only components specified by fire-resistant joint system manufacturer and approved by the qualified testing agency for systems indicated.
PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Surface Cleaning: Clean joints immediately before installing fire-resistive joint systems to comply with fire-resistive joint system manufacturer's written instructions and the following requirements:
   1. Remove from surfaces of joint substrates foreign materials that could interfere with adhesion of fill materials.
   2. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with fill materials. Remove loose particles remaining from cleaning operation.
   3. Remove laitance and form-release agents from concrete.

B. Priming: Prime substrates where recommended in writing by fire-resistive joint system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

C. Masking Tape: Use masking tape to prevent fill materials of fire-resistive joint system from contacting adjoining surfaces that will remain exposed on completion of the Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove stains. Remove tape as soon as possible without disturbing fire-resistive joint system's seal with substrates.

3.03 INSTALLATION

A. General: Install fire-resistive joint systems to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.

B. Install forming materials and other accessories of types required to support fill materials during their application and in position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
   1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of fire-resistive joint system.

C. Install fill materials for fire-resistive joint systems by proven techniques to produce the following results:
   1. Fill voids and cavities formed by joints and forming materials as required to achieve fire-resistance ratings indicated.
   2. Apply fill materials so they contact and adhere to substrates formed by joints.
   3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.
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3.04 IDENTIFICATION

A. Identify fire-resistive joint systems with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches (150 mm) of joint edge so labels will be visible to anyone seeking to remove or penetrate joint system. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
   2. Contractor’s name, address, and phone number.
   3. Designation of applicable testing agency.
   4. Date of installation.
   5. Manufacturer’s name.
   6. Installer’s name.

3.05 FIELD QUALITY CONTROL

A. Inspecting Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Where deficiencies are found or fire-resistive joint systems are damaged or removed due to testing, repair or replace fire-resistive joint systems so they comply with requirements.

C. Proceed with enclosing fire-resistive joint systems with other construction only after inspection reports are issued and installations comply with requirements.

3.06 CLEANING AND PROTECTING

A. Clean off excess fill materials adjacent to joints as the Work progresses by methods and with cleaning materials that are approved in writing by fire-resistive joint system manufacturers and that do not damage materials in which joints occur.

B. Provide final protection and maintain conditions during and after installation that ensure fire-resistive joint systems are without damage or deterioration at time of Substantial Completion. If damage or deterioration occurs despite such protection, cut out and remove damaged or deteriorated fire-resistive joint systems immediately and install new materials to produce fire-resistive joint systems complying with specified requirements.

END OF SECTION 078446
PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:
   1. Silicone joint sealants.
   2. Urethane joint sealants.
   3. Latex joint sealants.
   4. Preformed joint sealants.

1.03 PRECONSTRUCTION TESTING

A. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.
   1. Use ASTM C1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
   2. Samples for Verification: For each type of sealant submit a color sample board and one sample joint, 1/2" wide by 6" long including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
   3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
   4. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
   5. Retain subparagraph below if generic test data are acceptable.
   6. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.

1.04 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Joint-Sealant Schedule: Include the following information:
   1. Joint-sealant application, joint location, and designation.
   2. Joint-sealant manufacturer and product name.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer and testing agency.

B. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.
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C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.

D. Preconstruction Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

E. Warranties: Sample of special warranties.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project with a minimum of three years experience in the installation of the work of this section.

B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.

C. Product Testing: Test joint sealants using a qualified testing agency.
1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C1021 to conduct the testing indicated.
2. Test according to SWRI's Sealant Validation Program for compliance with requirements specified by reference to ASTM C920 for adhesion and cohesion under cyclic movement, adhesion-in-peel, and indentation hardness.

D. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.07 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:
1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.08 WARRANTY

A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
1. Warranty Period: Two years from date of Substantial Completion.
B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
   1. Warranty Period: Two years from date of Substantial Completion.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
   1. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer’s written specifications for sealant elongation and compression.
   2. Disintegration of joint substrates from natural causes exceeding design specifications.
   3. Mechanical damage caused by individuals, tools, or other outside agents.
   4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
   1. Architectural Sealants: 250 g/L.
   2. Sealant Primers for Nonporous Substrates: 250 g/L.
   3. Sealant Primers for Porous Substrates: 775 g/L.

C. Liquid-Applied Joint Sealants: Comply with ASTM C920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C920 classifications for type, grade, class, and uses related to exposure and joint substrates.
   1. Suitability for Immersion in Liquids. Where sealants are indicated for Use I for joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C 1247. Liquid used for testing sealants is deionized water, unless otherwise indicated.

D. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C1248 and have not stained porous joint substrates indicated for Project.

E. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.

F. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full color range.

2.02 SILICONE JOINT SEALANTS

A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C920, Type S, Grade NS, Class 100/50, for Use NT.
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1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. Dow Corning Corporation; 790.
   b. Pecora Corporation; 301 NS.
   c. Sika Corporation, Construction Products Division; SikaSil-C990.
   d. Tremco Incorporated; Spectrem 1.

B. Single-Component, Nonsag, Traffic-Grade, Neutral-Curing Silicone Joint Sealant: ASTM C920, Type S, Grade NS, Class 100/50, for Use T.
   1. Products: Subject to compliance with requirements, provide the following:
      a. Pecora Corporation; 311 NS.
      b. Tremco Incorporated; Spectrem 800.
      c. Or approved equal.

C. Single-Component, Pourable, Traffic-Grade, Neutral-Curing Silicone Joint Sealant: ASTM C920, Type S, Grade P, Class 100/50, for Use T.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Dow Corning Corporation; 890-SL.
      b. Pecora Corporation; 310 SL.
      c. Tremco Incorporated; Spectrem 900 SL.

D. Mildew-Resistant, Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C920, Type S, Grade NS, Class 25, for Use NT.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Tremco Incorporated; Tremsil 200.
      b. Pecora Corporation; 898.
      c. Or Approved Equal.

2.03 URETHANE JOINT SEALANTS

A. Single-Component, Nonsag, Urethane Joint Sealant: ASTM C920, Type S, Grade NS, Class 100/50, for Use NT.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Sika Corporation, Construction Products Division; Sikaflex - 15LM.
      b. Tremco Incorporated; Dymonic 100.
      c. Or approved Equal.

B. Single-Component, Nonsag, Traffic-Grade, Urethane Joint Sealant: ASTM C920. Type S, Grade NS, Class 25, for Use T.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. BASF Building Systems; Sonolastic NP1.
      b. Sika Corporation, Construction Products Division; Sikaflex - 1a.
      c. Tremco Incorporated; Vulkem 116, Dymonic FC.

C. Single-Component, Pourable, Traffic-Grade, Urethane Joint Sealant: ASTM C920, Type S, Grade P, Class 25, for Use T.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. BASF Building Systems; Sonolastic SL 1.
      b. Pecora Corporation; Urexpan NR-201.
      c. Sika Corporation, Construction Products Division; Sikaflex - 1CSL.
      d. Tremco Incorporated; Vulkem 45.
D. Immersible Multicomponent, Nonsag, Traffic-Grade, Urethane Joint Sealant: ASTM C920, Type M, Grade NS, Class 25, for Uses T and I.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. BASF Building Systems; Sonolastic NP 2.
      b. Pecora Corporation; Dynatred.
      c. Tremco Incorporated; THC 901.

2.04 LATEX JOINT SEALANTS

A. Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. BASF Building Systems; Sonolac.
      c. Pecora Corporation; AC-20+.
      d. Tremco Incorporated; Tremflex 834.
      e. Sherwin Williams Company (SherMax Urethanized Elastomeric Sealant).

2.05 PREFORMED JOINT SEALANTS

A. Preformed Foam Joint Sealant: Manufacturer’s standard preformed, precompressed, open-cell foam sealant manufactured from urethane foam with minimum density of 10 lb/cu. ft. (160 kg/cu. m) and impregnated with a nondrying, water-repellent agent. Factory produce in precompressed sizes in roll or stick form to fit joint widths indicated; coated on one side with a pressure-sensitive adhesive and covered with protective wrapping.
   1. Products: Subject to compliance with requirements, provide the following:
      a. Tremco Incorporated; Spectrum SimpleSeal.
      b. Tremco Incorporated; Illmod 600
      c. Dayton Superior Specialty Chemicals; Polytite Standard.
      d. Sandell Manufacturing Co., Inc.; Polyseal.

2.06 JOINT SEALANT BACKING

A. General: Provide sealant backings of material 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 C1330, Type C (closed-cell material with a surface skin) Type B (bicellular material with a surface skin) or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

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. Provide self-adhesive tape where applicable.
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2.07 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

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 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, 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 after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates 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 joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
      a. Metal.
      b. Glass.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.03 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
   1. Do not leave gaps between ends of sealant backings.
   2. Do not stretch, twist, puncture, or tear sealant backings.
   3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
   1. Place sealants so they directly contact and fully wet joint substrates.
   2. Completely fill recesses in each joint configuration.
   3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs 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. Remove excess sealant from surfaces adjacent to joints.
   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 profile per Figure 8A in ASTM C1193, unless otherwise indicated.
   4. Provide flush joint profile where indicated per Figure 8B in ASTM C1193.
   5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 8C in ASTM C1193.
      a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.04 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
   1. Extent of Testing: Test completed and cured sealant joints as follows:
      a. Perform 1 test for each 500 feet of joint length thereafter or 1 test per each floor per elevation.

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   a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
3. Inspect tested joints and report on the following:
   a. Whether sealants filled joint cavities and are free of voids.
   b. Whether sealant dimensions and configurations comply with specified requirements.
   c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer’s field-adhesion hand-pull test criteria.
4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.05 CLEANING
A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.06 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 Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.07 JOINT-SEALANT SCHEDULE
A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces.
   1. Joint Locations:
      a. Control and expansion joints in brick pavers.
      b. Isolation and contraction joints in cast-in-place concrete slabs.
      c. Tile control and expansion joints.
   2. Silicone Joint Sealant: Single component, nonsag, traffic grade, neutral curing
   5. Joint-Sealant Color: As selected by Architect from manufacturer’s full range of colors.

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   1. Joint Locations:
      b. Control and expansion joints in unit masonry.
      c. Joints in dimension stone cladding.
      d. Joints between metal panels.
      e. Joints between different materials listed above.
      f. Perimeter joints between materials listed above and frames of doors windows and louvers.
      g. Control and expansion joints in ceilings and other overhead surfaces.
   2. Silicone Joint Sealant: Single component, nonsag, neutral curing, Class 100/50.
   4. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

C. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.
   1. Joint Locations:
      b. Control and expansion joints in tile flooring.
   2. Urethane Joint Sealant: Single component, nonsag, traffic grade.
   3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

   1. Joint Locations:
      a. Perimeter joints of exterior openings where indicated.
      b. Tile control and expansion joints.
      c. Vertical joints on exposed surfaces of walls and partitions.
      d. Perimeter joints between interior wall surfaces and frames of interior doors windows and elevator entrances.
   3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

E. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal non-traffic surfaces.
   1. Joint Sealant Location:
      a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
      b. Tile control and expansion joints where indicated.
   2. Joint Sealant: Mildew resistant, single component, nonsag, neutral curing, Silicone.
   3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS
   A. Drawings and general provisions of the Contract, including General and Supplementary
      Conditions and general requirements of GOSR Specification Sections, apply to this Section.

1.02 SUMMARY
   A. Section includes hollow-metal work.

1.03 DEFINITIONS
   A. Minimum Thickness: Minimum thickness of base metal without coatings according to
      NAAMM-HMMA 803 or SDI A250.8.

1.04 COORDINATION
   A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates,
      and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and
      items with integral anchors. Deliver such items to Project site in time for installation.

1.05 ACTION SUBMITTALS
   A. Product Data: For each type of product.
      1. Include construction details, material descriptions, core descriptions, fire-resistance
         ratings, and finishes.
   B. Shop Drawings: Include the following:
      1. Elevations of each door type.
      2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
      3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
      4. Locations of reinforcement and preparations for hardware.
      5. Details of each different wall opening condition.
      6. Details of anchorages, joints, field splices, and connections.
      7. Details of accessories.
      8. Details of moldings, removable stops, and glazing.
      9. Details of conduit and preparations for power, signal, and control systems.
   C. Schedule: Provide a schedule of hollow-metal work prepared by or under the supervision of
      supplier, using same reference numbers for details and openings as those on Drawings.
      Coordinate with final Door Hardware Schedule.

1.06 INFORMATIONAL SUBMITTALS
   A. Product Test Reports: For each type of hollow-metal door and frame assembly, for tests
      performed by a qualified testing agency.

1.07 DELIVERY, STORAGE, AND HANDLING
   A. Deliver hollow-metal work palletized, packaged, or crated to provide protection during transit
      and Project-site storage. Do not use nonvented plastic.
      1. Provide additional protection to prevent damage to factory-finished units.
B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow-metal work vertically under cover at Project site with head up. Place on minimum 4-inch- (102-mm-) high wood blocking. Provide minimum 1/4-inch (6-mm) space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or approved equivalent:
   1. Amweld International, LLC
   2. Ceco Door Products an Assa Abloy Group company.
   3. Curries Company; an Assa Abloy Group company.
   4. Karpen Steel Custom Doors & Frames
   5. Michbi Doors Inc.
   6. Pioneer Industries, Inc
   7. Republic Doors and Frames.
   8. Steelcraft; an Ingersoll-Rand company.

B. Source Limitations: Obtain hollow-metal work from single source from single manufacturer.

2.02 REGULATORY REQUIREMENTS

A. Fire-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
   1. Smoke- and Draft-Control Assemblies: Provide an assembly with gaskets listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.

B. Fire-Rated: Complying with NFPA 80 and listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9.

2.03 INTERIOR DOORS AND FRAMES

A. Construct interior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Heavy-Duty Doors and Frames: SDI A250.8, Level 2. At locations indicated in the Door and Frame Schedule.
   1. Physical Performance: Level B according to SDI A250.4.
   2. Doors:
      a. Type: As indicated in the Door and Frame Schedule.
      b. Thickness: 1-3/4 inches (44.5 mm).
      c. Face: cold-rolled steel sheet, minimum thickness of 0.042 inch (1.0 mm).
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d. Edge Construction: Model 2, Seamless.
e. Core: Manufacturer's standard kraft-paper honeycomb or mineral-board.

3. Frames:
   a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm).
   b. Construction: Full profile welded.


2.04 FRAME ANCHORS

A. Jamb Anchors:
   1. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch (1.0 mm) thick.

2.05 MATERIALS

A. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.

C. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 04Z (12G) coating designation; mill phosphatized.

D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.

E. Metal Louvers:
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. Air Louvers, Inc
      b. Anemostat: a Mestek company
      c. or approved equal.
   3. Metal and Finish: Hot-dip galvanized steel, 0.040 inch thick, with baked-enamel or powder-coated finish.

2.06 FABRICATION

A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

B. Hollow-Metal Doors:
   1. Steel-Stiffened Door Cores: Provide minimum thickness 0.026 inch (0.66 mm), steel vertical stiffeners of same material as face sheets extending full-door height, with vertical webs spaced not more than 6 inches (152 mm) apart. Spot weld to face sheets no more than 5 inches (127 mm) o.c. Fill spaces between stiffeners with glass- or mineral-fiber insulation.
   2. Fire Door Cores: As required to provide fire-protection ratings indicated.
   3. Vertical Edges for Single-Acting Doors: Bevel edges 1/8 inch in 2 inches (3.2 mm in 51 mm).

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4. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets.
5. Bottom Edge Closures: Close bottom edges of doors with end closures or channels of same material as face sheets.
6. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch (19 mm) beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.

C Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
1. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
2. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.
3. Jamb Anchors: Provide number and spacing of anchors as follows:
   a. Stud-Wall Type: Locate anchors not more than 18 inches (457 mm) from top and bottom of frame. Space anchors not more than 32 inches (813 mm) o.c. and as follows:
      1) Three anchors per jamb up to 60 inches (1524 mm) high.
      2) Four anchors per jamb from 60 to 90 inches (1524 to 2286 mm) high.
      3) Five anchors per jamb from 90 to 96 inches (2286 to 2438 mm) high.
4. Head Anchors: Two anchors per head for frames more than 42 inches (1067 mm) wide and mounted in metal-stud partitions.
5. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
   a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.

D. Fabricate concealed stiffeners and edge channels from either cold- or hot-rolled steel sheet.

E. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
2. Comply with applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.

F. Stops and Frame Moldings: Provide beveled stops and frame moldings around glazed lites and louvers where indicated. Form corners of stops and moldings with mitered hairline joints.
1. Single Glazed Lites: Provide beveled fixed stops and moldings welded on secure side of hollow-metal work.
2. Multiple Glazed Lites: Provide beveled fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
3. Provide beveled fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
4. Provide beveled loose stops and moldings on inside of hollow-metal work.
5. Frame profiles shall be beveled unless indicated otherwise on the drawings.
6. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.

2.07 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer’s standard primer.
   1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDIA250.10; recommended by primer manufacturer for substrate, compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.03 INSTALLATION

A. General: Install hollow-metal work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.

B. Hollow-Metal Frames: Install hollow-metal frames of size and profile indicated. Comply with SDIA250.11 or NAAMM-HMMA 840 as required by standards specified.
   1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
      a. At fire-rated openings, install frames according to NFPA 80.
      b. Install frames with removable stops located on secure side of opening.
      c. Remove temporary braces necessary for installation only after frames have been properly set and secured.
      d. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
   2. In-Place Metal or Wood-Stud Partitions: Secure slip-on drywall frames in place according to manufacturer's written instructions.
   3. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
      a. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
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SECTION 081113.01 - INTERIOR HOLLOW METAL

b. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
c. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
d. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.

C. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Steel Doors:
   a. Between Door and Frame Jambs and Head: 1/8 inch (3.2 mm) plus or minus 1/32 inch (0.8 mm).
   b. Between Edges of Pairs of Doors: 1/8 inch (3.2 mm) to 1/4 inch (6.3 mm) plus or minus 1/32 inch (0.8 mm).
   c. At Bottom of Door: 3/4 inch (19.1 mm) plus or minus 1/32 inch (0.8 mm).
   d. Between Door Face and Stop: 1/16 inch (1.6 mm) to 1/8 inch (3.2 mm) plus or minus 1/32 inch (0.8 mm).

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

3.04 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow-metal work immediately after installation.

C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

D. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

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SECTION 081416 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:
1. Factory finishing flush wood doors.
2. Factory fitting flush wood doors to frames and factory machining for hardware.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of door. Include details of core and edge construction, louvers, and trim for openings. Include factory-finishing specifications.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; and the following:
1. Dimensions and locations of blocking.
2. Dimensions and locations of mortises and holes for hardware.
3. Dimensions and locations of cutouts.
4. Undercuts.
5. Requirements for veneer matching.
6. Doors to be factory finished and finish requirements.
7. Fire-protection ratings for fire-rated doors.

C. Samples for Verification:
1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish.
2. Louver blade and frame sections, 6 inches long, for each material and finish specified.

1.04 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For special warranty.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is certified for chain of custody by an FSC-accredited certification body and is a certified participant in AWI's Quality Certification Program.

B. Vendor Qualifications: A vendor that is certified for chain of custody by an FSC-accredited certification body.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in cardboard cartons and wrap bundles of doors in plastic sheeting.

C. Mark each door on top and bottom rail with opening number used on Shop Drawings.
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1.07 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during remainder of construction period.

B. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining temperature between 60 and 90 deg F and relative humidity between 43 and 70 percent during remainder of construction period.

1.08 WARRANTY

A. A. Special Warranty: Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
   a. Warping (bow, cup, or twist) more than 1/4 inch in a 42 by 84-inch section.
   b. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3 inch span.
2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by the following:
   1. Eqpers Industries
   2. Graham Wood Doors; an Assa Abloy Group company

B. Source Limitations: Obtain flush wood doors indicated to be blueprint matched with paneling from single manufacturer.

2.02 FLUSH WOOD DOORS, GENERAL

A. Quality Standard: In addition to requirements specified, comply with AWI's, AWMAC's, and WI's "Architectural Woodwork Standards WDMA I.S. 1A, "Architectural Wood Flush Doors."
1. Provide AWI Quality Certification Labels indicating that doors comply with requirements of grades specified.
2. Contract Documents contain selections chosen from options in quality standard and additional requirements beyond those of quality standard. Comply with those selections and requirements in addition to quality standard.

B. WDMA I.S. 1A Performance Grade: Heavy Duty and Extra Heavy Duty as specified.

C. WDMA I.S. 1A Performance Grade:
   1. Heavy Duty unless otherwise indicated.
   2. Extra Heavy Duty: public toilets, janitor's closets and assembly spaces.

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SECTION 081416 - FLUSH WOOD DOORS

2.03 VENEER-FACED DOORS FOR TRANSPARENT FINISH

A. Interior Solid-Core Doors:
1. Grade: Premium with Grade A faces.
2. Species: Oak.
3. Cut: Rotary cut
5. Room Match: Provide door faces of compatible color and grain within each separate room or area of building.
6. Exposed Vertical and Top Edges: Same species as faces - edge Type A.
7. Core: Either glued wood stave or structural composite lumber.
8. Construction: Five or seven plies. Stiles and rails are bonded to core, then entire unit is abrasive planed before veneering. Faces are bonded to core using a hot press.

2.04 LIGHT FRAMES AND LOUVERS

A. Metal Louvers:
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. Air Louvers, Inc
   b. Anemostat; a Mestek company
   c. or approved equal.
2. Blade Type: Vision-proof, inverted V, L4 Chevron as per WDMA I.S. 1A.
3. Metal and Finish: Hot-dip galvanized steel, 0.040 inch thick, with baked-enamel or powder-coated finish.

2.05 FABRICATION

A. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
1. Comply with NFPA 80 requirements for fire-rated doors.

B. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, BHMA A156.115W, and hardware templates.
1. Metal Astragals: Factory machine astragals and formed-steel edges for hardware for pairs of fire-rated doors.

C. Openings: Factory cut and trim openings through doors.
1. Louvers: Factory install louvers in prepared openings.

2.06 FACTORY FINISHING

A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises.
B. Factory finish doors that are indicated to receive transparent finish.

C. Transparent Finish:
   1. Grade: Premium.
   2. Finish: AWI's, AWMAC's, and WI's "Architectural Woodwork Standards" System 9, UV curable, acrylated epoxy, polyester, or urethane.
   4. Staining: As selected by Architect from manufacturer's full range.
   5. Effect: Semi-filled finish, produced by applying an additional finish coat to partially fill the wood pores or as selected by the architect.

PART 3 - EXECUTION

3.01 EXAMINATION
   A. Examine doors and installed door frames, with Installer present, before hanging doors.
      1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
      2. Reject doors with defects.
   B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION
   A. Hardware: For installation, see Section 087100 - DOOR HARDWARE.
   B. Installation Instructions: Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
      1. Install fire-rated doors according to NFPA 80.
   C. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
      1. Clearances: Provide 1/8 inch at heads, jambs, and between pairs of doors. Provide 1/8 inch from bottom of door to top of decorative floor finish or covering unless otherwise indicated. Where threshold is shown or scheduled, provide 1/4 inch from bottom of door to top of threshold unless otherwise indicated.
   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.

3.03 ADJUSTING
   A. Operation: Rehang or replace doors that do not swing or operate freely.
   B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.
END OF SECTION 081416
PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:
   1. Access doors and frames for walls and ceilings.
   2. Fire-resistive rated access door and frame units for wall and ceilings.

B. ASTM E 152 - Standard Methods of Fire Tests of Door Assemblies

C. NFPA 80 - Fire Doors and Windows

1.03 SUBMITTALS

A. Shop drawings: Fully describe and locate all items being furnished and include large scale details of principal construction features and internal reinforcement. Indicate dimensions, elevations, hardware, reinforcement, anchor types and spacing, and finishes.

B. Product Data: Indicate door and frame configuration and finishes with manufacturer’s standard details and catalog data demonstrating compliance with referenced standards

C. Samples: For each door face material, at least 3 by 5 inches (75 by 125 mm) in size, in specified finish.

D. Product Schedule: Provide complete access door and frame schedule, including types, locations, sizes, latching or locking provisions, and other data pertinent to installation.

1.04 QUALITY ASSURANCE

A. Manufacturer: Minimum five years documented experience producing products specified in this section.

B. Installer: Minimum five years documented experience installing products specified in this section.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Fire-Rated Access Doors and Frames: Units complying with NFPA 80 that are identical to access door and frame assemblies tested for fire-test-response characteristics according to the following test method and that are listed and labeled by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
   1. NFPA 252 or UL 10B for fire-rated access door assemblies installed vertically.
   2. NFPA 288 for fire-rated access door assemblies installed horizontally.
2.02 ACCESS DOORS AND FRAMES FOR WALLS AND CEILINGS

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated or comparable product by one of the following:
   1. Acudor Products, Inc.
   4. Milcor Inc.
   5. Nystrom, Inc.

B. Source Limitations: Obtain each type of access door and frame from single source from single manufacturer.

C. Flush Access Doors with Concealed Flanges:
   1. Assembly Description: Fabricate door to fit flush to frame. Provide frame with gypsum board beads for concealed flange installation.
   2. Locations: Wall and ceiling.
   3. Uncoated Steel Sheet for Door: Nominal 0.060 inch (1.52 mm), 16 gage.
      a. Finish: Factory prime

D. Fire-Rated, Flush Access Doors with Concealed Flanges
   1. Assembly Description: Fabricate door to fit flush to frame, with a core of mineral-fiber insulation enclosed in sheet metal. Provide self-latching door with automatic closer and interior latch release. Provide frame with gypsum board beads for concealed flange installation.
   2. Locations: Wall and ceiling.
   3. Fire-Resistance Rating: Not less than that of adjacent construction.
   4. Metallic-Coated Steel Sheet for Door: Nominal 0.040 inch (1.02 mm), 20 gage.
      a. Finish: Factory prime

E. Hardware:
   1. Latch: Self-latching bolt operated by flush key with interior release.

F. Locks:
   1. Cylinder locks keyed alike for each door panel. Provide 2 keys per access panel.
      Coordinate locks and keying with the Owner's requirements and existing keying system(s) where applicable.

2.03 MATERIALS

A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

B. Stainless Steel: Type 304, brushed #4 finish.

C. Frame Anchors: Same type as door face.

D. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329. At stainless steel doors, provide stainless steel fasteners.
2.04 FABRICATION

A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.

B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access doors to types of supports indicated.
   1. For concealed flanges with drywall bead, provide edge trim for gypsum board securely attached to perimeter of frames.
   2. Provide mounting holes in frames for attachment of units to metal or wood framing.
   3. Provide mounting holes in frame for attachment of masonry anchors.

2.05 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Steel and Metallic-Coated-Steel Finishes:
   1. Factory Prime: Apply manufacturer's standard, fast-curing, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Comply with manufacturer's written instructions for installing access doors and frames.

B. Verify that field measurements, surfaces, substrates and project conditions are as required and suitable for installation. Verify that rough openings for door and frame are correctly sized and located. Do not proceed with installation until unsatisfactory conditions have been corrected.

C. Install doors flush with adjacent finish surfaces or recessed to receive finish material.
D. Secure rigidly in place.
E. Position unit to provide convenient access to concealed work requiring access.

3.03 ADJUSTING
   A. Adjust doors and hardware, after installation, for proper operation.
   B. Remove and replace doors and frames that are warped, bowed, or otherwise damaged.
PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes:
   1. Mechanical door hardware for the following:
      a. Swinging doors.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Other Action Submittals:
   1. Door Hardware Schedule: Prepared by or under the supervision of Installer, detailing fabrication and assembly of door hardware, as well as installation procedures and diagrams. Coordinate final door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
      a. Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
      b. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule." Double space entries, and number and date each page.
      c. Format: Use same scheduling sequence and format and use same door numbers as in the Contract Documents.
      d. Content: Include the following information:
         1) Identification number, location, hand, fire rating, size, and material of each door and frame.
         2) Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
         3) Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
         4) Fastenings and other pertinent information.
         5) Explanation of abbreviations, symbols, and codes contained in schedule.
         6) Mounting locations for door hardware.

C. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.
B. Product Test Reports: For compliance with accessibility requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for door hardware on doors located in accessible routes.

C. Warranty: Special warranty specified in this Section.

D. CLOSEOUT SUBMITTALS
1. Maintenance Data: For each type of door hardware to include in maintenance manuals. Include final hardware and keying schedule.

E. QUALITY ASSURANCE
1. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and an Architectural Hardware Consultant who is available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.
   a. Warehousing Facilities: In Project's vicinity.
   b. Scheduling Responsibility: Preparation of door hardware and keying schedules.
   c. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
2. Architectural Hardware Consultant Qualifications: A 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 who is currently certified by DHI as follows:
   a. For door hardware, an Architectural Hardware Consultant (AHC) who is also an Electrified Hardware Consultant (EHC).
3. Source Limitations: Obtain each type of door hardware from a single manufacturer.
4. Fire-Rated Door Assemblies: Where fire-rated door assemblies are indicated, provide door hardware rated for use in assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C, unless otherwise indicated.
5. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meet requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
   a. Air Leakage Rate: Maximum air leakage of 0.3 cfm/sq. ft. at the tested pressure differential of 0.3-inch wg of water.
6. Means of Egress Doors: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.
   a. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf.
   b. Comply with the following maximum opening-force requirements:
      1) Interior, Non-Fire-Rated Hinged Doors: 5 lbf applied perpendicular to door.
      2) Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
   c. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch high.
   d. Adjust door closer sweep periods so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.
F. DELIVERY, STORAGE, AND HANDLING
1. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.
2. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.
3. Deliver keys and permanent cores to Owner by registered mail or overnight package service.

G. COORDINATION
1. Installation Templates: Distribute for doors, frames, and other work specified to be factory 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.
2. Security: Coordinate installation of door hardware, keying, and access control with Owner’s security consultant.
3. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

H. WARRANTY
1. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
   a. Failures include, but are not limited to, the following:
      1) Structural failures including excessive deflection, cracking, or breakage.
      2) Faulty operation of doors and door hardware.
      3) Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
   b. Warranty Period: Three years from date of Substantial Completion, unless otherwise indicated.
      1) Manual Closers: 10 years from date of Substantial Completion.

I. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

J. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors’ personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors.
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Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required. 
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades. 
3. Review sequence of operation narratives for each unique access controlled opening. 
4. Review and finalize construction schedule and verify availability of materials. 
5. Review the required inspecting, testing, commissioning, and demonstration procedures. 

K. At completion of installation, provide written documentation that components were applied to manufacturer’s instructions and recommendations and according to approved schedule. 

PART 2 - PRODUCTS  

2.01 DOOR HARDWARE  
A. Provide door hardware for each door as scheduled on Drawings to comply with requirements in this Section. 
1. Door Hardware Sets: Provide quantity, item, size, finish or color required for each new door leaf. Provide function as required by location. 

B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Schedule" Article. Products are identified by using door hardware designations, as follows: 
1. Named Manufacturers’ Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers’ names are abbreviated in Part 3 "Door Hardware Schedule" Article. 
2. References to BHMA Designations: Provide products complying with these designations and requirements for description, quality, and function. 

2.02 HINGES  
A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames. 
1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following: 
   a. Hager Companies. 
   b. IVES Hardware; an Ingersoll-Rand company. 
   c. McKinney Products Company; an ASSA ABLOY Group company. 
   d. Stanley Commercial Hardware; Div. of The Stanley Works. 
2. Quantity: Provide the following hinge quantity, unless otherwise indicated: 
   a. Two Hinges: For doors with heights up to 60 inches. 
   b. Three Hinges: For doors with heights 61 to 90 inches. 
   c. Four Hinges: For doors with heights 91 to 120 inches. 
   d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches. 
3. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required: 
   a. Widths up to 3’0”: 4-1/2” standard. 
   b. Sizes from 3’1” to 4’0”: 5” heavy weight. 
4. Hinge Weight and Base Material: Unless otherwise indicated, provide the following: 
   a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
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b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.

5. Hinge Options: Comply with the following where indicated in the Hardware Sets or on Drawings:
   a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.

2.03 MECHANICAL LOCKS AND LATCHES

A. Lock Functions: As indicated in door hardware schedule.

B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
   1. Bored Locks: Minimum 1/2-inch latchbolt throw.

C. Lock Backset: 2-3/4 inches (70 mm), unless otherwise indicated.

D. Lock Trim:
   1. Levers: Cast (Mortise Type) and Wrought (Cylindrical Type).
   2. Escutcheons (Roses): Cast (Mortise Type) and Wrought (Cylindrical Type).
   3. Dummy Trim: Match lever lock trim and escutcheons.

E. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.
   1. Rabbet Front and Strike: Provide on locksets for rabbeted meeting stiles.

2.04 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
   1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
   2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
   3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
   4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:
   2. Strikes for Bored Locks and Latches: BHMA A156.2.
   3. Strikes for Auxiliary Deadlocks: BHMA A156.5.
   4. Dustproof Strikes: BHMA A156.16.
2.05 POWER TRANSFER DEVICES

A. Electrified Quick Connect Transfer Hinges: Provide electrified transfer hinges with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.
   1. Acceptable Manufacturers:
      a. Hager Companies (HA) - ETW-QC (# wires) Option.
      b. McKinney Products (MK) - QC (# wires) Option.

B. Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.
   1. Acceptable Manufacturers:
      a. Adams Rite (AD) - 4612 Series.
      b. Securitron (SU) - EL-EPT Series.

C. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.
   1. Provide one each of the following tools as part of the base bid contract:
      b. McKinney Products (MK) - Connector Hand Tool: QC-R003.
   2. Acceptable Manufacturers:
      a. McKinney Products (MK) - QC-C Series.

2.06 AUXILIARY LOCKS

A. Bored Auxiliary Locks: BHMA A156.5: Grade 1; with strike that suits frame.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
      a. Arrow USA; an ASSA ABLOY Group company.
      b. SARGENT Manufacturing Company; an ASSA ABLOY Group company.

2.07 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:
   1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL 305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer’s catalog and template book for specific requirements.
   a. Fire Exit Removable Mullions: Provide keyed removable mullions for use with fire exit devices complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire and panic protection, based on testing according to UL 305 and NFPA 252. Mullions to be used only with exit devices for which they have been tested.
3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is not acceptable except in any case where the door light extends behind the device as in a full glass configuration.
5. Flush End Caps: Provide heavy weight impact resistant flush end caps made of architectural metal in the same finish as the devices as in the Hardware Sets. Plastic end caps will not be acceptable.
   a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets. Provided free-wheeling type trim where indicated.
   b. Where function of exit device requires a cylinder, provide an interchangeable core type keyed cylinder (Rim or Mortise) as specified in Hardware Sets.
7. Vertical Rod Exit Devices: Provide and install interior surface and concealed vertical rod exit devices as Less Bottom Rod (LBR) unless otherwise indicated.
8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2” wide stiles.
10. Rail Sizing: Provide exit device rails factory sized for proper door width application.
11. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

B. Conventional Push Rail Exit Devices, Aluminum Entrances: BHMA A156.3, Grade 1 certified panic devices furnished in the functions specified in the Hardware Sets. Push bar to be made of extruded aluminum, maximum projection of 3”, available in clad or anodized architectural finishes. Exit device design to fit narrow (minimum 2”), medium, or wide stile aluminum door applications.
   1. Acceptable Manufacturers:
      a. Adams Rite Manufacturing (AD) - 8000 Series.
      b. Falcon Hardware (FA) - Dor-O-Matic 1490/1590 Series.

2.08 SURFACE BOLTS

A. Surface Bolts: BHMA A156.16.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on the drawings or comparable product by one of the following:
      a. IVES Hardware; an Allegion company.
      b. Rockwood Mfg.; an ASSA ABLOY Company
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2.09 LOCK CYLINDERS

A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
      b. SARGENT Manufacturing Company; an ASSA ABLOY Group company.
      c. Corbin Russwin Manufacturing Company; an ASSA ABLOY Group company.

2.10 KEYING

   1. Existing System:
      a. Master key or grand master key locks to Owner's existing system.

B. Keys: Nickel silver.
   1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
      a. Notation: "DO NOT DUPLICATE."

2.11 OPERATING TRIM

A. Operating Trim: BHMA A156.6; stainless steel, unless otherwise indicated.

2.12 ELECTRIC STRIKES

A. Standard Electric Strikes: Heavy duty, cylindrical and mortise lock electric strikes conforming to BHMA A156.31, Grade 1, UL listed for both Burglary Resistance and for use on fire rated door assemblies. Stainless steel construction with dual interlocking plunger design tested to exceed 3000 lbs. of static strength and 350 ft-lbs. of dynamic strength. Strikes tested for a minimum 1 million operating cycles. Provide strikes with 12 or 24 VDC capability and supplied standard as fail-secure unless otherwise specified. Option available for latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike.
   1. Acceptable Manufacturers:
      a. Folger Adam EDC (FO).
      b. HES (HS).

2.13 SURFACE CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:
   1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.
   2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
   3. Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.
   4. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use.
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Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.

5. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.

6. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.

7. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates, and through-bolt and security type fasteners as required for proper installation.

B. Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer’s written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
   a. Corbin Russwin Hardware (RU) - DC6000 Series
   b. DORMA Architectural Hardware; Member of The DORMA Group North America.
   c. LCN Closers (LC); an Allegion Company - 4040 Series.
   d. Norton Door Controls (NO); an ASSA ABLOY Group company - 7500 Series.
   e. Yale Locks and Hardware (YA) - 4400 Series.

2.14 MAGNETIC HOLD OPENS

A. Magnetic Hold Opens: Heavy duty electrically controlled holding magnets, surface mounted wall die cast housing with concealed wiring.

1. Basis of Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product.
   a. LCN, an Allegion Company: SEM 7800 Series
   b. Or Approved Equal

B. Standards: Comply with the following:

1. UL listed for smoke barrier or labeled fire doors
2. ANSI Standard A156.15

C. Provide manufacturer’s standard for all magnets, armatures, cover and box of die cast material. Coordinate on site door locations and wall distances for extension and coupler assemblies requirements. Provide metal extensions as required.

2.15 MECHANICAL STOPS AND HOLDERS

A. Wall- and Floor-Mounted Stops: BHMA A156.16; polished cast brass, bronze, or aluminum base metal.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
   a. IVES Hardware; an Allegion company.
   b. Rockwood Mfg.; an ASSA ABLOY Company

B. Overhead Door Stops and Holders: ANSI/BHMA A156.6, Grade 1 certified overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy
tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.

1. Acceptable Manufacturers:
   a. Rixson Door Controls (RF).
   b. Rockwood Manufacturing (RO).
   c. Sargent Manufacturing (SA).

2.16 DOOR GASKETING

A. Door Gasketing: BHMA A156.22; air leakage not to exceed 0.50 cfm per foot of crack length for gasketing other than for smoke control, as tested according to ASTM E 283; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
   1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
   1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and UBC 7-2, Fire Tests of Door Assemblies.

D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Acceptable Manufacturers:
   1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
      a. National Guard Products.
      b. Pemko Manufacturing Co.; an ASSA ABLOY Group company.

2.17 THRESHOLDS

A. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
      a. National Guard Products.
      b. Pemko Manufacturing Co.; an ASSA ABLOY Group company

2.18 FABRICATION

A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by Architect.
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B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.

C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.

1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.

2. Fire-Rated Applications:
   a. Wood or Machine Screws: For the following:
      1) Hinges mortised to doors or frames; use threaded-to-the-head wood screws for wood doors and frames.
      2) Strike plates to frames.
      3) Closers to doors and frames.
   b. Steel Through Bolts: For the following unless door blocking is provided:
      1) Surface hinges to doors.
      2) Closers to doors and frames.
      3) Surface-mounted exit devices.

3. Fasteners for Wood Doors: Comply with requirements in DHI WDHS.2, “Recommended Fasteners for Wood Doors.”

4. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.19 FINISHES

A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

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3.02 PREPARATION

A. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.

B. Wood Doors: Comply with DHI WDHS.5 “Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors.”

3.03 INSTALLATION

A. Mounting Heights: 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. Custom Steel Doors and Frames: HMMA 831.

B. Install each door hardware item to comply with manufacturer’s written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing. Do not install surface-mounted items until finishes have been completed on substrates involved.
   1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
   2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

C. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

D. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant.

E. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

F. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

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. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

3.05 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.
C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.06 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.07 DOOR HARDWARE SETS

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should 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 and functionality.

B. The supplier is responsible for handling and sizing all products as listed in the door hardware sets. Quantities listed are for each pair of doors, or for each single door.

C. Manufacturer's Abbreviations:

1. MK - McKinney
2. PE - Pemko
3. RF - Rixson
4. RO - Rockwood
5. AD - Adams Rite
6. SA - Sargent
7. AT - Accurate Lock and Hardware
8. SU - Securitron
9. NO - Norton

HARDWARE SCHEDULE

HARDWARE SET 1 - DOOR 101-A

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITY</th>
<th>MANUF. AND CAT. NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUTTS</td>
<td>1-1/2 PAIR 6&quot;X5&quot; NRP</td>
<td>MCKINNEY T4B3386</td>
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</table>

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SECION 087100 - DOOR HARDWARE

<table>
<thead>
<tr>
<th>EXIT DEVICE</th>
<th>1</th>
<th>PRECISION 2103 X 1703A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(WITH RIM CYLINDER)</td>
</tr>
<tr>
<td>SURFACE MOUNTED OR CONCEALED DOOR CLOSER</td>
<td>1</td>
<td>LCN 4040XP MOUNTED WITH EXTRA DUTY ARM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4040XP-3077EDA OR LCN 2015 (CONCEALED)</td>
</tr>
<tr>
<td>OVERHEAD STOP WITH HOLDER</td>
<td>1</td>
<td>GLYNN-JOHNSON 81 SERIES</td>
</tr>
<tr>
<td>KICKPLATE</td>
<td>1</td>
<td>IVES 8400-BHMA 630-B4E</td>
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HARDWARE SET 2 - DOOR 103A-A, 103A-B, 103B-A, 301-A

<table>
<thead>
<tr>
<th>EACH DOOR: ITEM:</th>
<th>QUANTITY</th>
<th>MANUF. AND CAT.NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUTTS</td>
<td>1-1/2 PAIR 4 1/2&quot; X 4 1/2&quot;</td>
<td>MCKINNEY TB2714</td>
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<tr>
<td>RIM LATCH</td>
<td>1</td>
<td>YALE 80</td>
</tr>
<tr>
<td>SURFACE MOUNTED DOOR CLOSER</td>
<td>1</td>
<td>LCN 4010</td>
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<tr>
<td>PULL</td>
<td>1</td>
<td>ROCKWOOD 130</td>
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<tr>
<td>PUSH PLATE</td>
<td>1</td>
<td>ROCKWOOD 71C</td>
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<tr>
<td>SMOKE SEAL</td>
<td>1</td>
<td>PEMKO S44D</td>
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<tr>
<td>KICKPLATE</td>
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<td>IVES 8400-BHMA 630-B4E</td>
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HARDWARE SET 3 - DOOR 104A-A, 104B-A

<table>
<thead>
<tr>
<th>EACH DOOR: ITEM:</th>
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</thead>
<tbody>
<tr>
<td>BUTTS</td>
<td>1 PAIR 4 1/2&quot; X 4 1/2&quot;</td>
<td>MCKINNEY TB2714</td>
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<tr>
<td>LOCKSET</td>
<td>1</td>
<td>SARGENT 8204 LW1B</td>
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<tr>
<td>SURFACE MOUNTED DOOR CLOSER</td>
<td>1</td>
<td>LCN 1461 DEL</td>
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<tr>
<td>OVERHEAD STOP WITHOUT CLOSERS</td>
<td>1</td>
<td>GLYNN JOHNSON 81 SERIES</td>
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<tr>
<td>SILENCERS</td>
<td>3</td>
<td>IVES SR64</td>
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<tr>
<td>KICKPLATE</td>
<td>1</td>
<td>IVES 8400-BHMA 630-B4E</td>
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HARWARDE SET 4 - DOOR 110A-A, 101-B (DOUBLE DOOR)
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EACH DOOR:

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<th>ITEM</th>
<th>QUANTITY</th>
<th>MANUF. AND CAT. NO.</th>
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</thead>
<tbody>
<tr>
<td>BUTTS</td>
<td>1-1/2 PAIR 4 1/2&quot; X 4 1/2&quot;</td>
<td>MCKINNEY TB2714</td>
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<tr>
<td>EXIT DEVICE</td>
<td>1</td>
<td>PRECISION FL 2108X4908A (WITH RIM CYLINDER)</td>
</tr>
<tr>
<td>SURFACE MOUNTED DOOR CLOSER</td>
<td></td>
<td>LCN 4040XP</td>
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<tr>
<td>OVERHEAD STOP WITHOUT HOLDER</td>
<td></td>
<td>GLYNN JOHNSON 81</td>
</tr>
<tr>
<td>SMOKE SEAL</td>
<td></td>
<td>PEMKO S44D</td>
</tr>
<tr>
<td>KICKPLATE</td>
<td>1</td>
<td>IVES 8400-BHMA 630-B4E</td>
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HARDWARE SET 5 - DOOR 201-A, 202-A, 301-B

EACH DOOR:

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<th>ITEM</th>
<th>QUANTITY</th>
<th>MANUF. AND CAT. NO.</th>
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</thead>
<tbody>
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<td>BUTTS</td>
<td>1-1/2 PAIR 5&quot;X4 1/2&quot;</td>
<td>MCKINNEY TB3786</td>
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<tr>
<td>EXIT DEVICE</td>
<td>1</td>
<td>PRECISION FL 2108X4908A</td>
</tr>
<tr>
<td>SURFACE MOUNTED DOOR CLOSER (PARALLEL MOUNT PUSH SIDE OF DOOR)</td>
<td>1</td>
<td>LCN P4110 WITH EXTRA DUTY ARM 4110-3077EDA</td>
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<tr>
<td>OVERHEAD STOP WITHOUT HOLDER</td>
<td>1</td>
<td>GLYNN JOHNSON 81 SERIES WITH THROUGH BOLTS PEMKO S44D</td>
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<tr>
<td>SMOKE SEAL</td>
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</tr>
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<td>KICKPLATE</td>
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</tbody>
</table>

END OF SECTION 087100
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SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:
   1. Interior gypsum board.
   2. Tile Backer Gypsum Board.
   3. Moisture and Mold-Resistant gypsum board.
   4. Includes installation of joint treatment, finishing and miscellaneous specialties
   5. All related items necessary to complete the work of this section.

1.03 SUBMITTALS

A. Product Data: For each type of product.
   B. Submit manufacturers’ product information, specifications, and installation instructions for the
      specified products including joint compounds, fasteners, trim, control joints, joint reinforcing,
      metal furring members, metal studs, tracks, runners, resilient clips, steel grounds, and all
      related accessories.
      1. Trim Accessories: Full-size Sample in 12-inch (300-mm-) long length for each trim
         accessory indicated.

1.04 DELIVERY, STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather,
   condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack
   panels flat and supported on risers on a flat platform to prevent sagging.

1.05 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board
   manufacturer’s written recommendations, whichever are more stringent.
   B. 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.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and
   construction identical to those tested in assembly indicated according to ASTM E119 by an
   independent testing agency.
B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

2.02 GYPSUM BOARD, GENERAL

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

2.03 INTERIOR GYPSUM BOARD

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. National Gypsum Company.
   2. USG Corporation.
   3. Or approved equal.

B. Gypsum Wallboard: ASTM C 1396/C 1396M.
   1. Thickness: 5/8 inch (15.9 mm) and 1/2 inch (12.7 mm).
   2. Long Edges: Tapered and featured (rounded or beveled) for Pre-filling.

C. Gypsum Board, Type X: ASTM C 1396/C 1396M.
   1. Thickness: 5/8 inch (15.9 mm) and 1 inch (25.4 mm).

D. Moisture- and Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces.
   1. Core: 5/8 inch (15.9 mm), regular type; 5/8 inch Type X.
   2. Long Edges: Tapered.
   3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.04 SPECIALTY GYPSUM BOARD

2.05 TILE BACKING PANELS

A. Cementitious Backer Units: ANSI A118.9 and ASTM C 1288 or 1325, with manufacturer's standard edges.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. USG Corporation; Durock Cement Board.
      b. Or approved equal.
   2. Thickness: 5/8 inch
   3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.
   4. Tape: 2 inch wide, coated glass fiber tape for joints and corners;

2.06 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.
   1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
   2. Shapes:
      a. Cornerbead.
      b. L-Bead: L-shaped; exposed long flange receives joint compound.
2.07 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:
   1. Interior Gypsum Board: Paper.
   2. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
   1. Pre-filling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
   2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
      a. Use setting-type compound for installing paper-faced metal trim accessories.
   3. Fill Coat: For second coat, use setting-type, sandable topping compound.
   4. Finish Coat: For third coat, use setting-type, sandable topping compound.

2.08 MATERIALS

A. Fasteners: Fasteners for securing board to metal furring or wood shall be Phillips Head, black oxidized screws made for fastening gypsum wall board, size and length as recommended by the drywall manufacturer for the applications shown.

B. Joint Compound for Tile Backing Panels:
   1. Cementitious Backer Units: As recommended by backer unit manufacturer.

2.09 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
   1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.
   2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and framing, with Installer present, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.
3.02 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
   1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.
   2. Fit gypsum panels around ducts, pipes, and conduits.
   3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch (6.4- to 9.5-mm-) wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4 to 1/2-inch (6.4 to 12.7-mm) wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. 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.

3.03 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:
   1. Wallboard Type: As indicated on Drawings.
   2. Type X: As indicated on Drawings.
   3. Ceiling Type: As indicated on Drawings.
   4. Moisture- and Mold-Resistant Type: As indicated on Drawings.

B. Single-Layer Application:
   1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
   2. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
      a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.
3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

C. Multilayer Application:
1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints one framing member, 16 inches (400 mm) minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
3. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

3.04 CONSTRUCTION TOLERANCES

A. Do not exceed 1/8" in 8'-0" variation from plumb or level in any exposed line or surface, except at joints between units do not exceed 1/16" variation between planes of abutting edges or ends. Shim as required to comply with specified tolerances. Variations shall not be visible in finished surfaces.

B. For soffits and ceilings verify that direct suspension system has been installed properly, that main runners are spaced evenly and have been leveled to a tolerance of 1/8" in 12 feet measured both lengthwise on each runner and transversely between parallel runners so that furring member installation may proceed accurately.

C. Cementitious Backer Units: ANSI A108.11, at showers and locations indicated to receive tile.

3.05 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:
1. Exposed Edges: Where an exposed edge of gypsum drywall abuts dissimilar materials use Gold Bond #C250 casing bead or equal. Casing beads to be finished with joint compound. Same casing bead and joint treatment is to be used on exposed wallboard edges.

D. Trim: 1/16 inch thick extruded aluminum 6063-T5 mill finish manufactured by Gorden Inc. or approved equal:
1. J-Trim: Model JD-58
2. Control Joint: Model RD-5810
3. Corner Joint: Model FD-5810
4. 'F' Reveal: Model 412-5/8
5. Reveal Trim: Series 900, Model 904 RT-12

E. Neatly cut all openings so that they may be covered by plates and escutcheons.

F. Place control joints consistent with lines of building spaces as directed.
   1. Gypsum Panel surfaces should be isolated with control joints or other means where:
      a. Partition, furring or column fireproofing abuts a structural element (except floor) or dissimilar wall or ceiling;
      b. Ceiling abuts a structural element, dissimilar wall or partition or other vertical penetration; construction changes or ceiling;
      c. Construction changes within the plane of the partition or ceiling;
      d. Partition or furring run exceeds 30 feet;
      e. Ceiling dimensions exceed 50 feet in either direction;
      f. The area within separate ceiling sections exceeds 2,500 sq. ft.;
      g. Wings of "L", "U", and "T" shaped ceiling areas are joined;
   2. Penetrations of the gypsum panel diaphragm, such as door frames, borrowed-light openings, vents, grilles, access panels and light troffers, require additional reinforcement at the corners to distribute concentrated stresses if a control joint is not used.
   3. Place edge trim where gypsum board abuts dissimilar materials. Use longest practical length.
   4. Provide additional framing and blocking as required to support gypsum board at openings and cutouts, and to support built-in anchorage and attachment devices for other work.
   5. Coordinate installation of joint sealers specified in Section 079200 at penetrations and where abutting different materials.
   6. Cornerbead: Use at outside corners unless otherwise indicated.
   7. LC-Bead: Use where indicated.
   8. L-Bead: Use where indicated.

3.06 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Pre-fill open joints, rounded or beveled edges, and damaged surface areas.

C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
   1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
   2. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated. All joints and interior angles shall have tape embedded in joint compound and two separate coats of joint compound applied over all flat joints and one separate coat of joint compound applied over interior angles. Fastener heads and accessories shall be covered with three separate coats of joint compound. All joint compound shall be smooth and free of tool marks and ridges. Prepared surface shall be coated with a drywall primer/sealer prior to the application of finish paint.
      a. Primer and its application to surfaces are specified in Section 099123.01 "Interior Painting."
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3. Level 5: Where indicated on Drawings.
   a. Primer and its application to surfaces are specified in Section 099123.01 "Interior Painting."

   E. Cementitious Backer Units: Finish according to manufacturer's written instructions.

3.07 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900
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SECTION 093013 - TILING (THIN-SET)

PART 1 - GENERAL

1.01 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary 
Conditions and general requirements of GOSR Specification Sections, apply to this Section.

1.02 SUMMARY
A. Section Includes:
   1. Ceramic and Porcelain tile.
   2. Waterproof membrane.
   3. Metal edge strips.

1.03 DEFINITIONS
A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 
apply to Work of this Section unless otherwise specified.
B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI 
A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI 
A108.16, and ANSI A108.17, which are contained in "American National Standard 
Specifications for Installation of Ceramic Tile."
C. Module Size: Actual tile size plus joint width indicated.
D. Face Size: Actual tile size, excluding spacer lugs.

1.04 PERFORMANCE REQUIREMENTS
A. Dynamic Coefficient of Friction (DCOF AcuTest): For tile installed on walkway surfaces, provide 
products with the following values as determined by testing in accordance with ANSI standard 
A137.1, Section 9.6:
   1. Level Surfaces: Minimum 0.42.
   2. Step Treads: Minimum 0.42.
   3. Ramp Surfaces: 0.42.

1.05 ACTION SUBMITTALS
A. Product Data: For each type of product indicated including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
B. Samples for Initial Selection: For each type of tile and grout indicated indicating full range of 
colors and patterns. Include Samples of accessories involving color selection.

1.06 INFORMATIONAL SUBMITTALS
A. Qualification Data: For qualified Installer.

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B. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer certifying that products meet or exceed the specified requirements of ANSI A137.1.

C. Product Certificates: For each type of product, signed by product manufacturer.

D. Maintenance Data: Include recommended cleaning methods, cleaning materials, stain removal methods, and polishes and waxes.

1.07 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.
   2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

1.08 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with minimum two years' experience.

B. Single Source Responsibility: Obtain each type and color of tile from a single source. Obtain each type and color of mortar, adhesive and grout from the same source.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

C. Store liquid materials in unopened containers and protected from freezing.

D. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.10 PROJECT CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.01 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
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1. Provide tile complying with Standard grade requirements unless otherwise indicated.  

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCA installation methods specified in tile installation schedules, and other requirements specified.  

C. FloorScore Compliance: Tile for floors shall comply with requirements of FloorScore Standard.  

D. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.  

E. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.  

1. Where tile is indicated for installation in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.  

F. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by pre-coating with continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.  

G. Grout Release: High-performance, sacrificial, water-based coating to protect tile from grout residue and haze. Rinses with water during clean-up. Apply two coats and allow to cure for one-hour minimum prior to grouting. Installation and removal shall be as recommended by the manufacturer.  

1. Manufacturer: Mapei "UltraCare" Grout Release or approved equal.  

2.02 TILE PRODUCTS  

A. Tile Type: Porcelain glazed floor tile.  

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:  

a. American Olean; Division of Dal-Tile International Inc.  

b. Daltille; Division of Dal-Tile International Inc.: Affinity  

c. Or approved equal.  

2. Face Size: 18 by 18 inches (60 by 51.75 cm).  

3. Thickness: 3/8 inch (9.5 mm).  


5. Finish: Mat, clear glaze.  

6. Tile Color and Pattern: As selected by Architect from manufacturer's full range.  

7. Grout Color: As selected by Architect from manufacturer's full range.  

8. For Furan-grouted quarry tile, pre coat with temporary protective coating.  

9. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes.  

a. Base: Coved with surface bullnose top edge, face size 3 by 12 inches (76 by 304 mm).  

B. Glazed Wall Tile:  

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
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a. Daltile; Division of Dal-Tile International Inc; Rittenhouse Square TM -
b. Or approved equal.
2. Module Size: 3 inch by 6 inch (76 by 152 mm) or as indicated on the drawings.
3. Thickness: 1/4 inch (8 mm).
4. Face: Bevel edges.
5. Finish: Polished, clear glaze.
6. Tile Color and Pattern: As selected by Architect from manufacturer’s full range.
7. Grout Color: As selected by Architect from manufacturer’s full range.
8. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes selected from manufacturer’s standard shapes.
   a. Surface bullnose top edge, face size 3 by 6 inches (76 by 152 mm).

2.03 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.
   1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch (1.5 mm) above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch (12.7 mm) or less above adjacent floor surface.

B. Granite Thresholds: ASTM C615/C615M, with honed finish.
   1. Description: Uniform, medium-grained, gray stone without veining.

2.04 SETTING MATERIALS

   1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
      a. Laticrete International, Inc.
      b. MAPEI Corporation.
      c. TEC; a subsidiary of H. B. Fuller Company.
   2. Provide prepackaged, dry-mortar mix containing dry, redispersable, vinyl acetate or acrylic additive to which only water must be added at Project site.
   3. Provide prepackaged, dry-mortar mix combined with acrylic resin liquid-latex additive at Project site.
   4. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.

2.05 GROUT MATERIALS

A. Polymer-Modified Tile Grout: ANSI A118.7.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
      a. Laticrete International, Inc.
      b. MAPEI Corporation.
      c. TEC; a subsidiary of H. B. Fuller Company.
   2. Polymer Type: Ethylene vinyl acetate or acrylic additive, in dry, redispersable form, prepackaged with other dry ingredients.
   3. Polymer Type: Acrylic resin in liquid-latex form for addition to prepackaged dry-grout mix.
B. Water-Cleanable Epoxy Grout: ANSI A118.8, 100 percent solids with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D. Use in Toilet Room Floor installations.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
      a. Laticrete International, Inc.
      b. MAPEI Corporation.
      c. TEC; a subsidiary of H. B. Fuller Company.
   2. Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 deg F (60 deg C) and 212 deg F (100 deg C), respectively, and certified by manufacturer for intended use.

C. Grout for Pre-grouted Tile Sheets: Same product used in factory to pre-grout tile sheets.

2.06 ELASTOMERIC SEALANTS

A. General: Provide sealants, primers, backer rods, and other sealant accessories that comply with the following requirements and with the applicable requirements in Section 079200 "Joint Sealants".
   1. Sealants shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
   2. Use primers, backer rods, and sealant accessories recommended by sealant manufacturer.

B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints unless otherwise indicated.

C. Multi-part, Pourable Urethane Sealant for Use T: ASTM C920; Type M; Grade P; Class 25; Uses T, M, A, and, as applicable to joint substrates indicated, O.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Degussa Building Systems; Sonneborn Sonolastic SL 2.
      b. Pecora Corporation; Dynatrol II-SG.
      c. Sika Corporation; Sikaflex-2c SL.
      d. Tremco Incorporated.; Vulkem 245.

2.07 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

B. Metal Edge Strips: Angle or L-shape, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications; stainless-steel, ASTM A666, 300 Series exposed-edge material.

C. Decorative Color Coated Tile Edges: Schluter R Rondec, 1/4" radius bullnose profiles, extruded aluminum with color-coated finish color as selected by the architect. Provide inside and outside corner connectors and special shapes for a complete installation.

D. Temporary Protective Coating: Product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar, and grout products; and easily removable after grouting is completed without damaging grout or tile.
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1. Petroleum paraffin wax, fully refined and odorless, containing at least 0.5 percent oil with a melting point of 120 to 140 deg F (49 to 60 deg C) per ASTM D 87.
2. Grout release in form of manufacturer's standard proprietary liquid coating that is specially formulated and recommended for use as temporary protective coating for tile.

E. 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.

F. Grout Sealer: Manufacturer's standard silicone product for sealing grout joints and that does not change color or appearance of grout.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. Bonsal American; an Oldcastle company; Grout Sealer
   b. Bostik, Inc.; CeramaSeal Grout & Tile Sealer.
   c. C-Cure; Penetrating Sealer 978.
   d. Custom Building Products; Grout and Tile Sealer.
   e. Jamo Inc.; Penetrating Sealer.
   f. MAPEI Corporation; KER 003, Silicone Spray Sealer for Cementitious Tile Grout.
   g. Southern Grouts & Mortars, Inc.; Silicone Grout Sealer.
   i. TEC; a subsidiary of H. B. Fuller Company; TA-256 Penetrating Silicone Grout Sealer.

2.08 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.01 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 of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
2. Verify that concrete substrates for tile floors installed with thin-set mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.
   a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
   b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thin-set mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

B. Protect surrounding work from damage.

C. Remove any curing compounds or other contaminants.

D. Vacuum clean surfaces and damp clean.

E. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1a and is sloped 1/4 inch per foot (1:50) toward drains.

F. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

G. Field-Applied Temporary Protective Coating: If indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, pre coat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.03 TILE INSTALLATION

A. Comply with TNCA's "Handbook for Ceramic Tile Installation" for TNCA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in TNCA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

1. For the following installations, follow procedures in the ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:
   a. Tile floors in wet areas.
   b. Tile floors composed of tiles 8 by 8 inches (200 by 200 mm) or larger.
   c. Tile floors composed of rib-backed tiles.

B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
E. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
   1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
   2. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
   3. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.
   4. For Plank type tiles, install staggered in a "running bond" brick joint pattern with no more than 33 % overlap to prevent lippage and warping.

F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
   1. Porcelain Floor Tile: 3/16 inch (4.8 mm) minimum.
   2. Glazed Porcelain Wall Tile: 1/8 inch (4.8 mm).

G. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.

H. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
   1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
   2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants".

I. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.
   1. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in latex-Portland cement mortar (thin set).
   2. Do not extend waterproofing or crack isolation membrane under thresholds set in latex-Portland cement mortar. Fill joints between such thresholds and adjoining tile set on waterproofing or crack isolation membrane with elastomeric sealant.

J. Metal Edge Strips: Install where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with top of tile.

K. Grout Sealer: Apply grout sealer to cementitious grout joints in tile floors according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.04 TILE BACKING PANEL INSTALLATION

A. Install cementitious backer units and treat joints according to ANSI A118.11 and manufacturer's written instructions for type of application indicated. Use latex-Portland cement mortar for bonding material unless otherwise directed in manufacturer's written instructions.

3.05 CLEANING AND PROTECTING

A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
1. Remove epoxy and 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. For epoxy grout installations utilize recommended grout haze cleaner as recommended by the tile manufacturer. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
3. Remove temporary protective coating by method recommended by coating manufacturer and that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent drain clogging.

B. Protect installed tile work with Kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.

C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

D. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.06 INTERIOR TILE INSTALLATION SCHEDULE

A. Interior Floor Installations, Concrete Subfloor:
   1. Tile Installation F115A: Thin-set mortar; epoxy grout; TCNA F115A.
      a. Tile Type: Glazed Porcelain floor tile.
      c. Grout: Water-cleanable epoxy grout.

B. Interior Wall Installations, Metal Studs or Furring:
   1. Tile Installation W244: Thin-set mortar on cementitious backer units or fiber cement underlayment; TCNA W244F.
      a. Tile Type: Glazed Porcelain wall tile.
      c. Grout: Polymer-modified sanded grout.

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SECTION 095113 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS
   A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and general requirements of GOSR Specification Sections, apply to this Section.

1.02 SUMMARY
   A. Section includes acoustical panels and exposed suspension systems for ceilings.
   B. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete.

1.03 REGULATORY REQUIREMENTS
   A. New York City Building Code, Appendix R.
   B. New York City Board of Standards and Appeals.

1.04 ACTION SUBMITTALS
   A. Product Data: For each type of product.
   B. Samples: For each exposed product and for each color and texture specified, 6 inches (150 mm) in size.
   C. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.
      1. Acoustical Panel: Set of 6-inch- (150-mm-) square Samples of each type, color, pattern, and texture.
      2. Exposed Suspension-System Members, Moldings, and Trim: Set of 6-inch- (150-mm-) long Samples of each type, finish, and color.

1.05 INFORMATIONAL SUBMITTALS
   A. Qualification Data: For testing agency.
   B. Product Test Reports: For each acoustical panel ceiling, for tests performed by manufacturer and witnessed by a qualified testing agency.

1.06 CLOSEOUT SUBMITTALS
   A. Maintenance Data: For finishes to include in maintenance manuals.

1.07 MAINTENANCE MATERIAL SUBMITTALS
   A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
      1. Acoustical Ceiling Panels: Full-size panels equal to 2 percent of quantity installed.
      2. Suspension-System Components: Quantity of each exposed component including decorative moldings, equal to 2 percent of quantity installed.
1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical panels, suspension-system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.09 FIELD CONDITIONS

A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.

1.10 WARRANTY

A. Provide manufacturer's 30-year limited systems warranty covering defects in materials and / or factory workmanship for ceiling panels and suspension systems.

B. Provide manufacturer's 10-year limited warranty covering sagging and warping defects caused by materials or factory workmanship for Humidity and Moisture-resistant ceiling systems.

C. Provide manufacturer's 1-year limited warranty covering defects in materials and / or factory workmanship for Acoustical canopy ceiling systems.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Acoustical ceiling shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

B. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: Comply with ASTM E 1264 for Class A materials.

2. Smoke-Developed Index: 50 or less.

2.02 ACOUSTICAL PANELS, GENERAL

A. Low-Emitting Materials: Acoustical panel ceilings shall comply with the testing and product requirements of the California Department of Health Services "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

B. Source Limitations:
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1. Acoustical Ceiling Panel: Obtain each type from single source from single manufacturer.
2. Suspension System: Obtain each type from single source from single manufacturer.

C. Source Limitations: Obtain each type of acoustical ceiling panel and supporting suspension system from single source from single manufacturer.

D. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

E. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectance unless otherwise indicated.
   1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches (400 mm) away from test surface according to ASTM E 795.

F. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.
   1. Where appearance characteristics of acoustical panels are indicated by referencing pattern designations in ASTM E 1264 and not manufacturers' proprietary product designations, provide products selected by Architect from each manufacturer's full range that comply with requirements indicated for type, pattern, color, light reflectance, acoustical performance, edge detail, and size.

2.03 ACOUSTICAL PANELS - TYPE 1

A. Basis-of-Design Product:
   1. the basis for this specification is manufactured by Armstrong World Industries, Inc.
   2. Or approved equal. Whenever substitute products are to be considered, supporting technical literature samples, drawings and performance data must be submitted 10 days prior to bid to make a valid comparison of the products involved. Test reports by an independent test laboratory must be made available upon request.

B. Acoustical Panels shall comply with the following requirements:
   1. Surface texture: fine
   2. Composition: Mineral Fiber
   3. Color: White
   4. Size: 24" x 24" x 3/4"
   5. Grid: Suprafine XL 9/16" Exposed Tee, or approved equal
   7. Noise reduction coefficient (NCR): ASTM C 423; Classified with UL label on product carton, 0.70.
   8. Ceiling Attenuation Class (CAC) ASTM C 1414; Classified with UL label on product carton, 35
   9. Articulation Class (AC): ASTM E 1111; Classified with UL label on product carton N/A.
   10. Flame spread: ASTM E 1264; Class A (UL)
   12. Dimensional stability: Temperatures up to 120 degrees F and high humidity excluding only exterior use, use over standing water, and direct contact with moisture.
   13. Mold/mildew inhibitor: The front and back of the product have been treated with BioBlock, a paint that contains a special biocide that inhibits or retards the growth of mold or mildew, ASTM D 3273.

2.04 SPECIAL USE CEILING PANELS - TYPE 2

A. Basis-of-Design Product Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
2. Or approved equal.

B. Acoustical Panels shall comply with the following requirements:
1. Surface Texture: Smooth
2. Composition: Mineral Fiber
3. Color: White
4. Size: 24in X 24in X 5/8in
5. Grid: Prelude Plus XL Fire Guard 15/16" Exposed Tee
   <http://www.armstrong.com/commceilingsna/suspension_system.jsp?productLineId=68>
6. Edge Profile: Square Lay-In for interface with compatible Armstrong grid.
7. Noise Reduction Coefficient (NRC): ASTM C 423; Classified with UL label on product carton, N/A.
8. Ceiling Attenuation Class (CAC): ASTM C 1414; Classified with UL label on product carton, 40
9. Articulation Class (AC): ASTM E 1111; Classified with UL label on product carton N/A.
10. Flame Spread: ASTM E 1264; Fire Resistive
12. Dimensional Stability: Temperatures up to 120 degrees F and high humidity excluding only exterior use, use over standing water, and direct contact with moisture.
13. Mold/Mildew Inhibitor: The back only of the product has been treated with BioBlock, a paint that contains a special biocide that inhibits or retards the growth of mold or mildew, ASTM D 3273.

C. Classification: Provide panels complying with ASTM E 1264 for type, form, and pattern as follows:
1. Type and Form: Type IV, wet-formed mineral fiber with latex paint face; Form 2, water felted; with Durabrite acoustically transparent membrane. Anti-Mold / Mildew with BioBlock coating.
2. Performance Characteristics:
   a. Anti Mold & Mildew.
   b. Sag Resistant.
   c. Water Repellent.
   d. Washable.
   e. Scratch Resistant.
   f. Soil Resistant.
   g. Recycled Content (36%).
3. Pattern: Pattern G or as indicated by manufacturer's designation.

D. Color: White.

E. LR: Not less than 0.89.

F. NRC: N/A.
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G. Fire rating: Class A
H. CAC: Not less than 33.
I. Edge/Joint Detail: Square.
J. Thickness: 5/8 inch (17 mm).
K. Modular Size: 24 by 24 inches (610 by 610 mm)
L. Warranty: 30 year Performance warranty

2.05 METAL SUSPENSION SYSTEMS, GENERAL

A. Metal Suspension-System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635/C 635M.
   1. High-Humidity Finish: Comply with ASTM C 635/C 635M requirements for "Coating Classification for Severe Environment Performance" where high-humidity finishes are indicated.

B. Attachment Devices: Size for five times the design load indicated in ASTM C 635/C 635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.

C. Hanger Rods Flat Hangers: 1/4 inch diameter, Mild steel, zinc coated or protected with rust-inhibitive paint.

D. Angle Hangers: Angles with legs not less than 7/8 inch (22 mm) wide; formed with 0.04-inch-(1-mm-) thick, galvanized-steel sheet complying with ASTM A 653/A 653M, G90 (Z275) coating designation; with bolted connections and 5/16-inch- (8-mm-) diameter bolts.

E. Cold Rolled Channel: 1 1/2 inch deep, 16 MSG cold rolled steel with protective zinc coating. Tie to supporting structure with 12 SWG galvanized wire ties. Install at 4'-0" o.c. maximum or as indicated on the drawings. Retain "Seismic Stabilizer Bars" Paragraph below if required. Revise if stabilizer bars are needed to improve stability of the suspension system and panel alignment in non-seismic installations.

2.06 METAL SUSPENSION SYSTEM - 9/16 GRID

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Basis-of-Design Product Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
   2. CertainTeed Corp
   3. Chicago Metallic Corporation

C. Narrow-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized according to ASTM A 653/A 653M, not less than G30 (Z90) coating designation; with prefinished 9/16-inch- (15-mm-) wide metal caps on flanges.
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1. Structural Classification: Heavy-duty system.
2. End Condition of Cross Runners: butt-edge type.
3. Face Design: Flat, flush.

2.07 METAL SUSPENSION SYSTEM - 15/16 GRID

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
   1. Armstrong World Industries, Inc. Prelude XL Fire Guard 15/16” Closed Tee
   2. Or approved equal

2.08 METAL EDGE MOLDINGS AND TRIM

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
   1. Armstrong World Industries, Inc.
   2. Chicago Metallic Corporation.
   3. USG Interiors, Inc.; Subsidiary of USG Corporation.

C. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer’s standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.
   1. Provide manufacturer’s standard edge moldings that fit acoustical panel edge details and suspension systems indicated and that match width and configuration of exposed runners unless otherwise indicated.
   2. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.
   3. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.

B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

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3.02 PREPARATION

A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels 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/C 636M and seismic design requirements indicated, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

B. Suspend ceiling hangers from building's structural members and as follows:
   1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
   2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
   3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
   4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
   5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
   6. 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. Do not attach hangers to steel deck tabs.
   8. Do not attach hangers to steel roof deck. Attach hangers to structural members.
   9. Space hangers not more than 48 inches (1200 mm) o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches (200 mm) from ends of each member.
   10. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.

C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or post-installed anchors.

D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
   1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
   2. Screw attach moldings to substrate at intervals not more than 16 inches (400 mm) o.c. and not more than 3 inches (75 mm) from ends, leveling with ceiling suspension system to a
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- Tolerance of 1/8 inch in 12 feet (3.2 mm in 3.6 m). Miter corners accurately and connect securely.

3. Do not use exposed fasteners, including pop rivets, on moldings and trim.

E. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

F. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.

1. Arrange directionally patterned acoustical panels as follows: 
   a. As indicated on reflected ceiling plans.
   b. Install panels with pattern running in one direction parallel to short axis of space.

2. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.

3. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.

4. 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.

3.04 FIELD QUALITY CONTROL

A. Testing Agency: a qualified testing agency to perform tests and inspections and prepare test reports.

B. Perform the following tests and inspections of completed installations of acoustical panel ceiling hangers and anchors and fasteners in successive stages. Do not proceed with installations of acoustical panel ceiling hangers for the next area until test results for previously completed installations show compliance with requirements.

1. Extent of Each Test Area: When installation of ceiling suspension systems on each floor has reached 20 percent completion but no panels have been installed.
   a. Within each test area, testing agency will select one of every 10 power-actuated fasteners and post-installed anchors used to attach hangers to concrete and will test them for 200 lbf (890 N) of tension; it will also select one of every two post-installed anchors used to attach bracing wires to concrete and will test them for 440 lbf (1957 N) of tension.
   b. When testing discovers fasteners and anchors that do not comply with requirements, testing agency will test those anchors not previously tested until 20 pass consecutively and then will resume initial testing frequency.

C. Acoustical panel ceiling hangers and anchors and fasteners will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.
3.05 CLEANING

A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095113
PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:
   1. Resilient base.
   2. Resilient stair accessories.
   3. Resilient molding accessories.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product.
B. Samples: For each exposed product and for each color and texture specified, not less than 12 inches (300 mm) long.
C. Samples for Verification: For each type of product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples, but not less than 12 inches (300 mm) long.

1.04 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Furnish not less than 10 linear feet (3 linear m) for every 300 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) nor more than 90 deg F (32 deg C).

1.06 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) nor more than 95 degrees F, in spaces to receive resilient products during the following time periods:
   1. 48 hours before installation.
   2. During installation.
   3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).

C. Install resilient products after other finishing operations, including painting, have been completed.
PART 2 - PRODUCTS

2.01 THERMOPLASTIC-RUBBER BASE

A. Manufacturers:
1. Roppe Corporation, USA
2. Allstate Rubber Corp.
3. Burke Mercer Flooring Products, Division of Burke Industries Inc.
4. Johnsonite; A Tarkett Company
5. Or approved equal.

B. Product Standard: ASTM F1861, Type TP (rubber, thermoplastic).
   2. Style and Location:
      b. Profile: As indicated.

C. Fire-Test-Response Characteristics: As determined by testing identical products according to
   ASTM E648 or NFPA 253 by a qualified testing agency.
   1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

D. Thickness: 0.125 inch (3.2 mm).

E. Height: 6 inch (152 mm) or as indicated on Drawings.

F. Lengths: Coils in manufacturer's standard length.

G. Outside Corners: Preformed.

H. Inside Corners: Preformed.

I. Colors: As selected by Architect from manufacturer's full range of colors.

2.02 RUBBER STAIR ACCESSORIES

A. Fire-Test-Response Characteristics: As determined by testing identical products according to
   ASTM E648 or NFPA 253 by a qualified testing agency.
   1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

B. Manufacturers: Subject to compliance with requirements, provide products by one of the
   following:
   1. Burke Mercer Flooring Products, Division of Burke Industries Inc.
   2. Johnsonite; A Tarkett Company.
   3. Roppe Corporation, USA.

C. Stair Treads: ASTM F2169.
   1. Type: TP (rubber, thermoplastic).
   2. Class: 1 (smooth, flat).
   4. Nosing Style: Curved
   5. Nosing Height: 1-1/2 inches (38 mm).
6. Thickness: 1/4 inch (6 mm) and tapered to back edge.
7. Size: Lengths and depths to fit each stair tread in one piece or, for treads exceeding maximum lengths manufactured, in equal-length units.

D. Landing Tile: Matching treads; produced by same manufacturer as treads and recommended by manufacturer for installation with treads.

E. Locations: Provide rubber stair accessories in areas indicated.

F. Colors and Patterns: As selected by Architect from manufacturer's full range of colors and patterns.

2.03 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

C. Stair-Tread Nose Filler: Two-part epoxy compound recommended by resilient stair-tread manufacturer to fill nosing substrates that do not conform to tread contours.

D. Floor Polish: Provide protective, liquid floor-polish products recommended by resilient stair-tread manufacturer.

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 products indicates acceptance of surfaces and conditions.

3.02 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

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 BASE INSTALLATION

A. Comply with manufacturer’s written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer’s recommended adhesive filler material.

G. Preformed Corners: Install preformed corners before installing straight pieces.

3.04 RESILIENT ACCESSORY INSTALLATION

A. Comply with manufacturer’s written instructions for installing resilient accessories.

B. Resilient Stair Accessories:
   1. Use stair-tread-nose filler to fill nosing substrates that do not conform to tread contours.
   2. Tightly adhere to substrates throughout length of each piece.
   3. For treads installed as separate, equal-length units, install to produce a flush joint between units.

3.05 CLEANING AND PROTECTION

A. Comply with manufacturer’s written instructions for cleaning and protecting resilient products.

B. Perform the following operations immediately after completing resilient-product installation:
   1. Remove adhesive and other blemishes from exposed surfaces.
   2. Sweep and vacuum horizontal surfaces thoroughly.
   3. Damp-mop horizontal surfaces to remove marks and soil.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Floor Polish: Remove soil, visible adhesive, and surface blemishes from resilient stair treads before applying liquid floor polish.
   1. Apply two coat(s).

E. Cover resilient products subject to wear and foot traffic until Substantial Completion.
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SECTION 096513 - RESILIENT BASE AND ACCESSORIES

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SECTION 096543 - LINOLEUM FLOORING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS  
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and general requirements of GOSR Specification Sections, apply to this Section.

1.02 SUMMARY  
A. Section includes:  
1. Linoleum Floor Tile.

1.03 ACTION SUBMITTALS  
A. Product Data: For each type of product.
B. Shop Drawings: For each type of linoleum flooring. Include flooring layouts, locations of seams, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.  
1. Show details of special patterns.
C. Samples: For each exposed product and for each color and pattern specified in manufacturer’s standard size, but not less than 6-by-9-inch (152-by-230-mm) sections.

1.04 INFORMATIONAL SUBMITTALS  
A. Qualification Data: For Installer.

1.05 CLOSEOUT SUBMITTALS  
A. Maintenance Data: For each type of linoleum flooring to include in maintenance manuals.

1.06 MAINTENANCE MATERIAL SUBMITTALS  
A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.  
1. Floor Tile: Furnish one box for every 20 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

1.07 QUALITY ASSURANCE  
A. Installer Qualifications: A qualified installer who employs workers for this Project who are competent in techniques required by manufacturer for flooring installation.  
1. Engage an installer who employs workers for this Project who are trained and certified by the approved flooring manufacturer for installation techniques required.
B. Pre-installation Conference: The contractor shall arrange a Pre-installation conference with the approved manufacturer’s Field Representative, installation personnel, the contractor and his field representative, and owner’s field representative in order to review the contract document requirements, approved submittals, manufacturer's instructions and procedures for the preparation for, testing of substrate and installation of the materials noted in this section.
1.08 DELIVERY, STORAGE, AND HANDLING

A. Store flooring and installation materials in dry spaces protected from the weather, with ambient temperature and humidity maintained within ranges recommended by manufacturer.
   1. Floor Tile: Store on flat surfaces.

1.09 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 68 deg F (20 deg C), in spaces to receive flooring during the following time periods:
   1. 7 days before installation.
   2. During installation.
   3. 7 days after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer.

C. Close spaces to traffic during flooring installation.

D. Close spaces to traffic for 72 hours after flooring installation.

E. Install flooring after other finishing operations, including painting, have been completed.

F. Concrete Curing: Installation shall be commenced after substrates have cured and are dry to bond with adhesive as determined by the resilient flooring manufacturer's recommended bond testing, moisture testing and pH testing. Testing shall be accomplished by the Flooring Contractor and a report provided to the architect confirming acceptance prior to installation.

1.10 WARRANTY

A. Manufacturer's Warranty: Submit, for the Owner's acceptance, manufacturer's standard warranty document executed by an authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under the Contract Documents.
   1. Warranty Period: Five-year limited warranty commencing on the Date of Substantial Completion.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For linoleum flooring, as determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.
   1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

B. FloorScore Compliance: Flooring shall comply with requirements of FloorScore certification.

2.02 LINOLEUM FLOOR TILE

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
   1. Forbo Industries, Inc.- Marmoleum Modular Tile with Topshield 2 TM.
   2. Or approved equal.

C. Linoleum Floor Tile: ASTM F 2195, Type I, linoleum floor tile with fibrous backing.
   1. Nominal Floor Tile Size: 20 inch by 20 inch or as indicated on the drawings.

D. Thickness: 0.10 inch (2.5 mm).
E. Backing: Polyester
F. Carton Size: 20 Tiles (53.82 sq. ft.)
G. Colors and Patterns: As selected by Architect from full range of manufacturer's standard colors and patterns. Color and pattern shall extend throughout the full thickness of the material.
H. Adhesive: Forbo Sustain 885m Adhesive.
I. Net Fit Seams: Material shall be installed utilizing net fit seams.
J. Finish: Topshield 2 TM Finish shall be applied during the manufacturing process.

2.03 INSTALLATION MATERIALS
A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by linoleum flooring manufacturer for applications indicated.
B. Adhesives: Water-resistant type recommended by flooring and adhesive manufacturers to suit products and substrate conditions indicated.
   1. Adhesives shall have a VOC content of 50 g/L or less.
C. Floor Polish: Provide protective, liquid floor-polish products recommended by linoleum flooring manufacturer unless material is factory finished.

2.04 SOURCE QUALITY
A. Source Quality: Obtain all flooring products specified under this section from a single manufacturer.

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 flooring.
B. Material Inspection: In accordance with the manufacturer's installation requirements, visually inspect the materials prior to installation. Material with visual defects shall not be installed and shall not be considered a legitimate claim.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Prepare substrates according to linoleum flooring manufacturer's written instructions to ensure adhesion of flooring.

B. Concrete Substrates: Prepare according to ASTM F 710.
   1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
   2. Remove substrate coatings and other substances that are incompatible with flooring adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by linoleum flooring manufacturer. Do not use solvents.
   3. Alkalinity and Adhesion Testing: Perform tests recommended by linoleum flooring manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 7.0 or more than 10 pH. Perform remedial work on concrete slabs falling outside these parameters.
   4. Moisture Testing: Perform tests recommended by linoleum flooring manufacturer, but not less stringent than the following:
      a. Perform one test of each type for every 1000 sq. ft. of flooring with a minimum of three tests. The test shall be performed at the perimeter of the room, at column locations and where moisture may be evident.
      b. A diagram shall be provided to the Architect indicating the location of each test along with date of testing.
      c. Perform anhydrous calcium chloride test according to ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) in 24 hours.
      d. Perform relative humidity test using in situ probes according to ASTM F 2170. Proceed with installation only after substrates have maximum 75 percent relative humidity level

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install flooring until it is the same temperature as space where it is to be installed.
   1. At least 72 hours in advance of installation, move flooring and installation materials into spaces where they will be installed.

E. Immediately before installation, sweep and vacuum clean substrates to be covered by flooring.

3.03 INSTALLATION, GENERAL

A. Comply with manufacturer's written instructions for installing flooring.

B. Scribe and cut flooring to butt neatly and tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings.

C. Extend flooring into toe spaces, door reveals, closets, and similar openings.
D. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on flooring as marked on substrates. Use chalk or other non-permanent marking device.

E. Install flooring on covers for telephone and electrical ducts and similar items in finished floor areas. Maintain overall continuity of color and pattern between pieces of flooring installed on covers and adjoining flooring. Tightly adhere flooring edges to substrates that abut covers and to cover perimeters.

F. Adhere flooring to substrates using a trowel as recommended by the flooring manufacturer producing a full spread of adhesive applied to substrate for a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

G. Spread rate shall be approximately 125 sq. ft. per gallon unless recommended otherwise by the approved manufacturer.

H. Provide Flash Cove installations in height indicated on the drawings.

I. Do not install resilient flooring over expansion joints. Use expansion joint covers manufactured for use with resilient flooring.

J. Roll resilient flooring as required by the approved resilient flooring manufacturer.

3.04 LINOLEUM FLOOR TILE INSTALLATION

A. Lay out linoleum floor tiles from center marks established with principal walls, discounting minor offsets, so floor tiles 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 floor tiles in pattern indicated.

B. Match linoleum floor tiles for color and pattern by selecting tiles from cartons in same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed floor tiles.
   1. Lay floor tiles in pattern of colors and sizes indicated.

3.05 CLEANING AND PROTECTION

A. Comply with manufacturer’s written instructions for cleaning and protecting linoleum flooring.

B. Perform the following operations immediately after completing linoleum flooring installation:
   1. Remove adhesive and other blemishes from exposed surfaces.
   2. Sweep and vacuum surfaces thoroughly.
   3. Damp-mop surfaces to remove marks and soil.

C. Protect linoleum flooring from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Remove temporary coverings and protections at Substantial Completion. Repair or replace damaged installed products.

E. Spray buff factory finished floors as recommended by the manufacturer.
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SECTION 099113 - EXTERIOR PAINTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes surface preparation and the application of paint systems on the following exterior substrates:
1. Galvanized metal.

1.03 DEFINITIONS

A. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
B. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
C. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
D. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D523.
E. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D523.
F. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D523.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.
B. Samples for Initial Selection: For each type of topcoat product.
C. Samples for Verification: For each type of paint system and each color and gloss of topcoat.
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. Label each Sample for location and application area.
D. Product List: For each product indicated, include the following:
1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
3. VOC content.
1.05 CLOSEOUT SUBMITTALS

A. Coating Maintenance manual: Manual: Upon conclusion of the project, the Contractor or paint manufacturer/supplier shall furnish a coating maintenance manual, such as Sherwin-Williams “Custodian Project Color and Product Information report or equal. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.

1.06 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

1.07 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
   a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft..
   b. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on mockups.
   a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
   b. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
   c. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.08 DELIVERY, STORAGE, AND HANDLING

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

B. Delivery and Handling: Deliver products to Project site in an undamaged condition in manufacturer’s original sealed containers, complete with labels and instructions for handling, storing, unpacking, protecting, and installing. Packaging shall bear the manufacturer’s label with the following information:
   1. Product name and type (description).
   2. Batch date.
   3. Color number.
   4. VOC content.
   5. Environmental handling requirements.
   6. Surface preparation requirements.
   7. Application instructions.
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SECTION 099113 - EXTERIOR PAINTING

1.09 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Sherwin Williams
   2. Benjamin Moore & Co.
   3. PPG Architectural Finishes, Inc.

B. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to products listed in other Part 2 articles for the paint category indicated.

2.02 PAINT, GENERAL

A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."

B. Material Compatibility:
   1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
   2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

C. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction.

D. Colors: As selected by Architect from manufacturer's full range.

2.03 SOURCE QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:
   1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
   2. Testing agency will perform tests for compliance with product requirements.
   3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.
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SECTION 099113 - EXTERIOR PAINTING

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers. Where acceptability of substrate conditions is in question, apply samples and perform in-situ testing to verify compatibility, adhesion, and film integrity of new paint application.
   1. Report, in writing, conditions that may affect application, appearance, or performance of paint.

B. Substrate Conditions:
   1. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
   2. Proceed with coating application only after unsatisfactory conditions have been corrected.
      a. Application of coating indicates acceptance of surfaces and conditions.

3.02 PREPARATION

A. Comply with manufacturer’s written instructions and recommendations in "MPI Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
   1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
   1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:
   1. SSPC-SP 3, "Power Tool Cleaning."
   2. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
   3. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."

E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

G. Aluminum Substrates: Remove loose surface oxidation.
3.03 APPLICATION

A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Manual."
   1. Use applicators and techniques suited for paint and substrate indicated.
   2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
   3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
   4. Paint entire exposed surface of window frames and sashes.
   5. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
   6. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
   1. Paint the following work where exposed to view:
      a. Equipment, including panelboards and switch gear.
      b. Uninsulated metal piping.
      c. Uninsulated plastic piping.
      d. Pipe hangers and supports.
      e. Metal conduit.
      f. Plastic conduit.
      g. Tanks that do not have factory-applied final finishes.

3.04 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
   1. Contractor shall touch up and restore painted surfaces damaged by testing.
   2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.05 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.06 EXTERIOR PAINTING SCHEDULE

A. Galvanized-Metal Substrates:
   1. Alkyd System:
      a. Prime Coat: Primer, galvanized metal, as recommended in writing by topcoat manufacturer for exterior use on galvanized-metal substrates with topcoat indicated.
      c. Topcoat: Sherwin-Williams, Protective & Marine, Steel Spec Fast Dry Alkyd, B55 Series, gloss (Gloss Level 5), MPI #96.

END OF SECTION 099113
PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes surface preparation and the application of paint systems on interior substrates.
   1. Concrete Masonry Units.
   2. Gypsum board.
   3. Wood.
   4. Wood doors.
   5. Wood handrails
   6. Wood Stair risers.
   7. Metal doors.

1.03 DEFINITIONS

A. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to
   ASTM D523.

B. Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees,
   according to ASTM D523.

C. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to
   ASTM D523.

D. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according
   to ASTM D523.

E. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D523.

F. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D523.

G. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D523.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application
   instructions.
   1. Samples for Initial Selection: For each type of topcoat product.
      a. Product List: For each product indicated, include the following:
         1) Cross-reference to paint system and locations of application areas. Use same
            designations indicated on Drawings and in schedules.
         2) Printout of current "MPI Approved Products List" for each product category
            specified in Part 2, with the proposed product highlighted.
         3) VOC content.
1.05 CLOSEOUT SUBMITTALS

A. Coating Maintenance manual: Manual: Upon conclusion of the project, the Contractor or paint manufacturer/supplier shall furnish a coating maintenance manual, such as Sherwin-Williams “Custodian Project Color and Product Information” report or equal. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.

1.06 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

B. Coating Maintenance manual: Manual: Upon conclusion of the project, the Contractor or paint manufacturer/supplier shall furnish a coating maintenance manual, such as Sherwin-Williams “Custodian Project Color and Product Information” report or equal. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.

1.07 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
      a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft..
         1) Other Items: Architect will designate items or areas required.
      b. Final approval of color selections will be based on mockups.
         1) If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
      c. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
         1) Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.08 DELIVERY, STORAGE, AND HANDLING

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

B. Delivery and Handling: Deliver products to Project site in an undamaged condition in manufacturer's original sealed containers, complete with labels and instructions for handling, storing, unpacking, protecting, and installing. Packaging shall bear the manufacturer's label with the following information:
   1. Product name and type (description).
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a. Batch date.
b. Color number.
c. VOC content.
d. Environmental handling requirements.
e. Surface preparation requirements.
f. Application instructions.

1.09 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
   1. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
   2. Lead Paint: It is not expected that lead paint will be encountered in the Work.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   2. Benjamin Moore & Co.
   3. PPG Architectural Finishes, Inc.

2.02 PAINT, GENERAL

A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."

B. Material Compatibility:
   1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
   2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

C. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction and, for interior paints and coatings applied at Project site, the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

1. Flat Paints and Coatings: 50 g/L.
2. Nonflat Paints and Coatings: 150 g/L.
3. Dry-Fog Coatings: 400 g/L.
4. Primers, Sealers, and Undercoaters: 200 g/L.
5. Anti-corrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.
7. Pretreatment Wash Primers: 420 g/L.
8. Floor Coatings: 100 g/L.
9. Shellacs, Clear: 730 g/L.
10. Shellacs, Pigmented: 550 g/L.
D. Colors: As selected by Architect from manufacturer's full range.
   1. 30 percent of surface area will be painted with deep tones.

2.03 BLOCK FILLERS

A. Block Filler, Latex, Interior/Exterior: MPI #4.
   1. Sherwin-Williams - PrepRite Int/Ext Block Filler, B25W25, at 75-125 sq. ft. per gal (2.4 to 4.9 sq. m per l) (E3)
   2. Benjamin Moore - Super Spec - Int/Ext High-Build Block Filler - 206/K206 (75-100 sq. ft. / gal = 4.2 mdf per coat), VOC 55 g/l, CHPS (E3)
   3. Or approved equal.

2.04 PRIMERS/SEALERS

A. Primer Sealer, Latex, Interior: MPI #50.
   1. Sherwin-Williams - Pro Mar 200 Zero - Interior Latex Primer - B28W02600/B28WQ2600 (E3)
   2. Benjamin Moore - Eco Spec WB -- #372 Ultra Spec 500 Latex Primer N534 (0 g/l), 50 X-Green (E3)
      a. PPG - Speedhide Interior Latex - Quick-Drying #6-2 (E3)

B. Primer Sealer, Interior, Institutional Low Odor/VOC: MPI #149.
   1. Sherwin-Williams - ProMar 200 Zero - Interior Latex Primer - B28W02600/B28WQ2600 (E3)
   2. Benjamin-Moore - Eco Spec WB - Interior Latex Primer - N372/Benjamin Moore - Ultra Spec 500 Latex Primer N534 +(0 g/l), MPI 149 X-Green, (E3)
   3. PPG - Speedhide Zero Interior Zero VOC - #6-4900XI (E3)

C. Primer, Latex, for Interior Wood: MPI #39.
   1. Sherwin-Williams - PrepRite ProBlock Primer Sealer - B51-620 Series, at 4.0 mils wet, 1.4 mils dry. (E3)
   2. Benjamin Moore - Fresh Start - High Hiding All Purpose Primer - 046/K046 Fresh Start N023 Primer, CHPS Certified (E3)
   3. Or approved equal.

D. Primer, Galvanized, Water Based: MPI #134.
   1. Sherwin Williams - Pro Industrial - Pro-Cryl Universal Primer - B66W310 (E2)
   2. Benjamin Moore Super Spec HP Acrylic Metal Primer P04/KP04.
   3. Or approved equal.

2.05 WATER-BASED PAINTS

A. Latex, Interior, Institutional Low Odor/VOC, Flat (Gloss Level 1): MPI #143.
   1. Sherwin-Williams - Harmony - Interior Acrylic Latex Flat - B05W01051 (E3)
   2. Benjamin Moore - Eco Spec WB - Interior Latex Paint - Flat n373/F373 Ultra Spec 500 Latex Eggshell N538 (0 g/l), MPI #143 X-Green, CHPS Certified (E3).
   3. Or approved Equal.

B. Latex, Interior, Institutional Low Odor/VOC, (Gloss Level 3): MPI #145
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2. Benjamin Moore - Eco Spec WB - Interior Eggshell Finish - N374/F374-Ultra Spec500
   Latex Eggshell N538 (0 g/l), MPI # 145 X-Green, CHPS Certified (E3).
3. PPG Speedhide Zero - Interior Zero VOC Latex Flat - #6-4110XI (E3).

   1. Sherwin-Williams - SuperPaint - Interior Latex Satin - A87W001151/A87WQ1151 (E3)
   2. Benjamin Moore Regal Select Waterborne Interior Paint - Eggshell Finish #549, 1.5 mdf, (0 g/I), MPI #138 X-Green, CHPS Certified.
   3. Or approved equal.

2.06 SOLVENT-BASED PAINTS

A. Epoxy Primer MPI #212
   1. Sherwin-Williams - Protective & Marine - ArmorSeal 33 Epoxy Primer - B58AQ33/B60VQ33 (E3)
   2. Or approved Equal

B. Alkyd, Quick Dry, Semi-Gloss (Gloss Level 5): MPI #81.
   1. Corotech Alkyd Enamel Semi-Gloss V231, 2.0 - 2.5 mdf, 389 g/I.
   2. Or approved equal.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers. Where acceptability of substrate conditions is in question, apply samples and perform in-situ testing to verify compatibility, adhesion, and film integrity of new paint application.
   1. Report in writing conditions that may affect application, appearance or performance of paint.

B. Substrate Conditions:
   1. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
      a. Masonry (Clay and CMU): 12 percent.
      b. Wood: 15 percent.
      c. Gypsum Board: 12 percent.
   2. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

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

3.02 PREPARATION

A. Comply with manufacturer’s written instructions and recommendations in “MPI Manual” applicable to substrates indicated.

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B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
   1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection, if any.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
   1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceed that permitted in manufacturer's written instructions.
   1. SSPC-SP 3, "Power Tool Cleaning."

E. Shop-Primed Steel Substrates: Clean field welds, bolted connections and abraded areas of shop paint and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop primed surfaces.

F. Galvanized Metal Surfaces: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

G. Wood Substrates:
   1. Scrape and clean knots and apply coat of knot sealer before applying primer.
   2. Sand surfaces that will be exposed to view and dust off.
   3. Prime edges, ends, faces, undersides and backsides of wood.
   4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

3.03 APPLICATION

A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."
   1. Use applicators and techniques suited for paint and substrate indicated.
   2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
   3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
   4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
   5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. 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.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:

1. Unless otherwise specified or noted, paint all “unfinished” conduits, piping, hangers, ductwork and other mechanical and electrical equipment with color and texture to match adjacent surfaces, in the following areas:
   a. where exposed-to-view in all exterior and interior areas.
   b. in all interior high humidity interior areas.
   c. in all boiler room, mechanical and electrical rooms.
2. In unfinished areas leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks.
3. Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.
4. Do not paint over nameplates.
5. Paint the inside of all ductwork where visible behind louvers, grilles and diffusers for a minimum of 18” or beyond sight line, whichever is greater, with primer and one coat of matt black (non-reflecting) paint.
6. Paint the inside of light valances gloss white.
7. Paint disconnect switches for fire alarm system and exit light systems in red enamel.
8. Paint red or band all fire protection piping and sprinkler lines in accordance with mechanical specification requirements and the AHJ. Keep sprinkler heads free of paint.
9. Paint yellow or band all natural gas piping in accordance with mechanical specification requirements and the AHJ.
10. Backprime and paint face and edges of plywood service panels for telephone and electrical equipment before installation to match adjacent wall surface. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.
   a. Uninsulated plastic piping.
   b. Pipe hangers and supports.
   c. Metal conduit.
   d. Plastic conduit.
   e. Tanks that do not have factory-applied final finishes.
   f. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material. Coordinate the installation of required piping labels with the installing contractor in order to schedule painting prior to application of labels.
11. Paint the following work where exposed in occupied spaces:
   a. Equipment, including panelboards.
   b. Uninsulated metal piping.
   c. Uninsulated plastic piping.
   d. Pipe hangers and supports.
   e. Metal conduit.
   f. Plastic conduit.
   g. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
   h. Other items as directed by Architect.
12. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.
3.04 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
   1. Contractor shall touch up and restore painted surfaces damaged by testing.
   2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.05 PROTECTION

A. Protect all exterior surfaces and areas, including landscaping, walks, drives, all adjacent building surfaces (including glass, aluminum surfaces, etc.) and equipment and any labels and signage from painting operations and damage by drop cloths, shields, masking, templates, or other suitable protective means and make good any damage caused by failure to provide such protection.

B. Protect all interior surfaces and areas, including glass, aluminum surfaces, etc. and equipment and any labels and signage from painting operations and damage by drop cloths, shields, masking, templates, or other suitable protective means and make good any damage caused by failure to provide such protection.

C. Erect barriers or screens and post signs to warn of or limit or direct traffic away or around work area as required.

3.06 CLEANING

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site. Keep work area free from an unnecessary accumulation of tools, equipment, surplus materials and debris.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Remove combustible rubbish materials and empty paint cans each day and safely dispose of same in accordance with requirements of authorities having jurisdiction.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.07 INTERIOR PAINTING SCHEDULE

A. CMU Substrates
   1. Latex System: (MPI INT 4.2A)
      b. Intermediate coat: Latex interior, matching topcoat.
      c. Topcoat: Latex, interior flat (Gloss Level 1), MPI #53 X-Green / #143 X-Green): S-W Pro Mar 200 Zero VOC Latex Flat, B30-2600 Series applied to achieve 1.6 mils dry per coat.
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d. Topcoat: Latex, interior flat (Gloss Level 2), MPI #44 X-Green / #144 X-Green): S-W Pro Mar 200 Zero VOC Latex Low Sheen Enamel, B24-2600 Series applied to achieve 1.6 mils dry per coat.
f. Topcoat: Latex, interior semi-gloss (Gloss Level 4), MPI #43 X-Green: S-W Pro Mar 200 Zero VOC Latex Egg-Shell, B31-2600 Series applied to achieve 1.6 mils dry per coat.
g. Topcoat: Latex, interior gloss (Gloss Level 5, MPI #54: S-W Pro Mar 200 Zero VOC Latex Gloss, B11-2200 Series applied to achieve 1.5 mils dry per coat.

B. Metal Substrates:
1. Latex System: (MPI INT 5.1Q)
   c. Topcoat: Water based acrylic, gloss (Gloss Level 5), MPI #147 X-Green, S-W Pro Industrial Acrylic Semi-Gloss Coating, B66-650 Series at 2.5 to 4.0 mils dry per coat.

C. Galvanized-Metal Substrates:
1. Pigmented Polyurethane System: (MPI INT 5.4C)
   a. Prime Coat: Primer as recommended in writing by topcoat manufacturer.
   c. Topcoat: Polyurethane, two-component, pigmented, gloss: Sherwin-Williams - Water Based Acrolon 100 Polyurethane, B65-720 Series, at 2.0 to 4.0 mils dry, per coat.

D. Wood Substrates:
1. Water-Based Light Industrial Coating System:
   a. Prime Coat: Primer sealer, latex, interior, MPI #39: S-W PrepRite ProBlock Primer Sealer, B51-620 Series, at 4.0 mils wet, 1.4 mils dry (E3)
   c. Topcoat: Light industrial coating, interior, water based, eggshell, (Gloss Level 3), MPI #151: Sherwin Williams - Pro Industrial Pre-Catalyzed Water Based Epoxy, K45-151 Series, at 4.0 mils wet, 1.5 mils dry, per coat (E1)

2. Stain & Varnish
   a. Stain: MPI #90: Sherwin Williams - Wood Classics 250 - A49-800 Series (E3)
   b. Intermediate Coat: Sherwin Williams - Classics Waterborne Polyurethane Varnish - Satin - 4.0 mils wet, 1.0 mils dry.
   c. Topcoat: Sherwin Williams - Classics Waterborne Polyurethane Varnish - Satin - 4.0 mils wet, 1.0 mils dry.

E. Gypsum Board Substrates:
1. Latex System: (INT 9.2A)
   c. Topcoat: Latex, interior, flat (Gloss Level 1), MPI #53 X-Green/#143 X-Green: S-W Pro Mar 200 Zero VOC Latex Flat, B30-2600 Series, at 4.0 mils wet, 1.6 mils dry, per coat.
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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:
   1. Room and door identification signs.

1.03 DEFINITIONS

A. Accessible: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board’s ADA-ABA Accessibility Guidelines for Buildings and Facilities and ICC A117.1 for signs.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For panel signs.
   1. Include fabrication and installation details and attachments to other work.
   2. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
   3. Show message list, typestyles, graphic elements, including raised characters and Braille, and layout for each sign at least half size.

C. Samples for Initial Selection: For each type of sign assembly, exposed component, and exposed finish.
   1. Include representative Samples of available typestyles and graphic symbols.
   2. Provide manufacturer's full color palette in the form of a color deck or actual samples for selections by the Architect.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and manufacturer.

B. Sample Warranty: For special warranty.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Package signs as required to prevent damage before installation.
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B. Package room and door signs in sequential order of installation, labeled by floor or building.

C. Store tape adhesive at normal room temperature.

1.08 FIELD CONDITIONS

A. Field Measurements: Verify locations of signage and field mounting surfaces in the field before fabrication, and indicate measurements on Shop Drawings.

B. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.

C. Maintain this minimum temperature during and after installation of signs.

1.09 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

   1. Failures include, but are not limited to, the following:
      a. Deterioration of finishes beyond normal weathering.
      b. Deterioration of embedded graphic image.
      c. Separation or delamination of sheet materials and components.

   2. Warranty Period: one year from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 PANEL SIGNS, GENERAL

A. Regional Materials: Panel signs shall be manufactured within 500 miles (800 km) of Project site.

2.02 PERFORMANCE REQUIREMENTS

A. Thermal Movements: For exterior signs, allow for thermal movements from ambient and surface temperature changes.

   1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

B. Accessibility Standard: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board’s ADA-ABA Accessibility Guidelines for Buildings and Facilities and ICC A117.1 for signs.

2.03 SIGNS

A. Manufacturers: Subject to compliance with requirements, provide products by the following:

B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated or comparable product by one of the following:

   1. ASI Sign Systems, Inc.
   2. Best Sign Systems Inc.
   4. Precision Signs
C. Panel Sign: Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:
1. Basis-of-Design Product: ASI Sign Systems, Inc.; InTacTM.
2. Laminated-Sheet Sign: Sandblasted polymer face sheet with raised graphics laminated over subsurface graphics to acrylic backing sheet to produce composite sheet.
   a. Composite-Sheet Thickness: 0.125 inch (3.18 mm).
   c. Subsurface Graphics.
3. Mounting: Surface mounted to wall with concealed anchors two-face tape.
4. Surface Finish and Applied Graphics:
   a. Integral Sheet Color: As selected by Architect from full range of industry colors.
   b. Painted Finish and Graphics: Manufacturer's standard, factory-applied acrylic polyurethane, in color as selected by Architect from manufacturer's full range.
5. Text and Typeface: Accessible raised characters and Braille Tags: Clear raster balls shall be drilled and tapped using ASI's Intac procedure and InTac Braille guide.
6. Flatness Tolerance: Sign panel shall remain flat or uniformly curved under installed conditions as indicated and within a tolerance of plus or minus 1/16 inch (1.5 mm) Insert dimension measured diagonally from corner to corner.

D. Room Identification Sign: Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:
1. Basis-of-Design Product: ASI Sign Systems, Inc.; InTacTM.
2. Laminated-Sheet Sign: face sheet with raised graphics laminated to backing sheet to produce composite sheet.
   a. Composite-Sheet Thickness: As indicated Manufacturer's standard for size of sign 0.125 inch (3.18 mm).
   d. Grade 2 Braille Tags: Clear raster balls shall be drilled and tapped using ASI's Intac procedure and InTac Braille guide.
   e. Color(s): As selected by Architect from manufacturer's full range.
   a. Edge Condition: Square cut.
   b. Corner Condition in Elevation: Square.
4. Mounting: Manufacturer's standard method for substrates indicated with concealed anchors as selected by the Architect.
5. Text and Typeface: Accessible raised characters and Braille typeface as selected by Architect from manufacturer's full range.

2.04 PANEL-SIGN MATERIALS
A. Vinyl Film: UV-resistant vinyl film of nominal thickness indicated, with pressure-sensitive, permanent adhesive on back; die cut to form characters or images as indicated and suitable for exterior applications.
B. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.
2.05 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signage, noncorrosive and compatible with each material joined, and complying with the following:
   1. Use concealed fasteners and anchors unless indicated to be exposed.
   2. For exterior exposure, furnish stainless-steel devices unless otherwise indicated.
   3. Exposed Metal-Fastener Components, General:
      a. Fabricated from same basic metal and finish of fastened metal unless otherwise indicated.
      b. Fastener Heads: For nonstructural connections, use screws and bolts with tamper-resistant spanner-head slots unless otherwise indicated.
   4. Sign Mounting Fasteners:
      a. Concealed Studs: Concealed (blind), threaded studs welded or brazed to back of sign material or screwed into back of sign assembly, unless otherwise indicated.
   5. Inserts: Furnish inserts to be set by other trades into concrete or masonry work.

B. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch thick, with adhesive on both sides.

2.06 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
   1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
   2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
   3. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
   4. Provide rebates, lugs, and brackets necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.

B. Subsurface-Applied Graphics: Apply graphics to back face of clear face-sheet material to produce precisely formed image. Image shall be free of rough edges.

2.07 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Directional Finishes: Run grain with long dimension of each piece and perpendicular to long dimension of finished trim or border surface unless otherwise indicated.

D. Organic, Anodic, and Chemically Produced Finishes: Apply to formed metal after fabrication but before applying contrasting polished finishes on raised features unless otherwise indicated.
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PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of signage work.

B. Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated.

C. Verify that anchor inserts are correctly sized and located to accommodate signs.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
   1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
   2. Install signs so they do not protrude or obstruct according to the accessibility standard.
   3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
   4. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

B. Room Identification Signs and Other Accessible Signage: Install in locations on walls as indicated and according to ADAAG accessibility standards.

C. Mounting Methods:
   1. Concealed Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.
      a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place sign in position and push until flush to surface, embedding studs in holes. Temporarily support sign in position until adhesive fully sets.
      b. Thin or Hollow Surfaces: Place sign in position and flush to surface, install washers and nuts on studs projecting through opposite side of surface, and tighten.
   2. Projecting Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.
      a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place spacers on studs, place sign in position, and push until spacers are pinched between sign and substrate, embedding the stud ends in holes. Temporarily support sign in position until adhesive fully sets.
      b. Thin or Hollow Surfaces: Place spacers on studs, place sign in position with spacers pinched between sign and substrate, and install washers and nuts on stud ends projecting through opposite side of surface, and tighten.
   3. Adhesive: Clean bond-breaking materials from substrate surface and remove loose debris. Apply linear beads or spots of adhesive symmetrically to back of sign and of suitable quantity to support weight of sign after cure without slippage. Keep adhesive away from edges to prevent adhesive extrusion as sign is applied and to prevent visibility.
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of cured adhesive at sign edges. Place sign in position, and push to engage adhesive. Temporarily support sign in position until adhesive fully sets.

4. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position, and push to engage tape adhesive.

3.03 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 101423
PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:
   1. Overhead braced, solid surface toilet compartments configured as toilet enclosures, urinal screens, etc.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: For toilet compartments. Include plans, elevations, sections, details, and attachments to other work.
   1. Show locations of cutouts for compartment-mounted toilet accessories.
   2. Show locations of reinforcements for compartment-mounted grab bars.
   3. Show locations of centerlines of toilet fixtures.

C. Samples for Initial Selection: For each type of unit indicated. Include Samples of hardware and accessories involving material and color selection.

D. Manufacturer's Warranty: Manufacturer's standard 15-year limited warranty for panels, doors and stiles against breakage, corrosion, delamination and defects in factory workmanship. Manufacturer's standard 1 year guarantee against defects in material and workmanship for stainless steel door hardware and mounting brackets.

1.04 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of toilet compartment, from manufacturer.

1.05 CLOSEOUT SUBMITTALS

A. Maintenance Data: For toilet compartments to include in maintenance manuals.

1.06 QUALITY ASSURANCE


B. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84, or another standard acceptable to authorities having jurisdiction, by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
   1. Flame-Spread Index: 30 or less.
   2. Smoke-Developed Index: 55 or less.

C. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) and
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SECTION 102122 - TOILET COMPARTMENTS - SOLID SURFACE

Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities and
ICC/ANSI A117.1 for toilet compartments designated as accessible.

1.07 PROJECT CONDITIONS
A. Field Measurements: Verify actual locations of toilet fixtures, walls, columns, ceilings, and other
   construction contiguous with toilet compartments by field measurements before fabrication.

PART 2 - PRODUCTS

2.01 MATERIALS
A. Aluminum Castings: ASTM B 26/B 26M.
B. Aluminum Extrusions: ASTM B 221 (ASTM B 221M).
C. Brass Castings: ASTM B 584.
D. Brass Extrusions: ASTM B 455.
E. Stainless-Steel Castings: ASTM A 743/A 743M.
F. Zamac: ASTM B 86, commercial zinc-alloy die castings.

2.02 SOLID SURFACE TOILET PARTITION UNITS
A. Manufacturers: Subject to compliance with requirements, provide products by one of the
   following:
B. Basis-of-Design Product:
   1. Bradley Corporation; Mills Partitions.
   2. Comtec Industries/Capitol Partitions.
   3. Santana Products, Inc.
   4. The DuPont Company, Corian surfaced
C. Toilet-Enclosure Style: Overhead braced.
D. Urinal-Screen Style: Wall hung.
E. Door, Panel, Screen, and Pilaster Construction: Solid, high-density polyethylene (HDPE) or
   panel material, not less than 1 inch (25 mm) thick, seamless, with eased edges, no-sightline
   system, and with homogenous color and pattern throughout thickness of material.
   1. Heat-Sink Strip: Manufacturer's standard continuous, extruded-aluminum strip fastened to
      exposed bottom edges of solid-polymer components to prevent burning.
   2. Color and Pattern: Two colors and patterns in each room as selected by Architect from
      manufacturer's full range.
F. Pilaster Shoes and Sleeves (Caps): Manufacturer's standard design; 14 gauge stainless steel.
   1. Polymer Color and Pattern: Matching pilaster or contrasting with pilaster, as selected by
      Architect from manufacturer's full range.
G. Urinal-Screen Post: Manufacturer's standard post design of material matching the thickness
   and construction of pilasters; with shoe and sleeve (cap) matching that on the pilaster.
H. Brackets (Fittings):
   1. Full-Height (Continuous) Type: Manufacturer's standard design; polymer or extruded
      aluminum extruded aluminum or stainless steel as indicated on the drawings.
      a. Polymer Color and Pattern: Contrasting with panel, as indicated by manufacturer's
         designations.

2.03 ACCESSORIES
A. Hardware and Accessories: Manufacturer's standard design, heavy-duty operating hardware
   and accessories.
   2. Hinges: Manufacturer's standard paired, self-closing type that can be adjusted to hold
      doors open at any angle up to 90 degrees.
   3. Latch and Keeper: Manufacturer's standard latch unit designed for emergency access and
      with combination rubber-faced door strike and keeper. Provide units that comply with
      regulatory requirements for accessibility at compartments designated as accessible.
   4. Door Bumper: Manufacturer's standard rubber-tipped bumper at out-swinging doors and
      entrance-screen doors.
   5. Door Pull: Manufacturer's standard unit at out-swinging doors that complies with
      regulatory requirements for accessibility. Provide units on both sides of doors at
      compartments designated as accessible.

B. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with
   antigrip profile and in manufacturer's standard finish.

C. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel or
   chrome-plated steel or brass, finished to match the items they are securing, with
   theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed
   anchors, use stainless steel, hot-dip galvanized steel, or other rust-resistant, protective-coated
   steel.
   1. Masonry Anchors: Type H/S Drop-In Anchors by the Rawlplug Co., Inc., New Rochelle,
      NY 10802.

2.04 FABRICATION
A. Overhead-Braced Units: Provide manufacturer's standard corrosion-resistant supports, leveling
   mechanism, and anchors at pilasters to suit floor conditions. Provide shoes at pilasters to
   conceal supports and leveling mechanism.

B. Door Size and Swings: Unless otherwise indicated, provide 24-inch- (610-mm-) wide, in-swinging
   doors for standard toilet compartments and 36-inch- (914-mm-) wide, out-swinging
   doors with a minimum 32-inch- (813-mm-) wide, clear opening for compartments designated as
   accessible.

PART 3 - EXECUTION
3.01 INSTALLATION
A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight,
   level, and plumb. Secure units in position with manufacturer's recommended anchoring
   devices.
   1. Maximum Clearances:
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SECTION 102122 - TOILET COMPARTMENTS - SOLID SURFACE

a. Pilasters and Panels: 1/2 inch (13 mm).
b. Panels and Walls: 1 inch (25 mm).

B. Overhead-Braced Units: Secure pilasters to floor and level, plumb, and tighten. Set pilasters with anchors penetrating not less than 1-3/4 inches (44 mm) into structural floor unless otherwise indicated in manufacturer’s written instructions. Secure continuous head rail to each pilaster with no fewer than two fasteners. Hang doors to align tops of doors with tops of panels, and adjust so tops of doors are parallel with overhead brace when doors are in closed position.

C. Urinal Screens: Attach with anchoring devices to suit supporting structure. Set units level and plumb, rigid, and secured to resist lateral impact.

3.02 ADJUSTING

A. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer’s written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors and doors in entrance screens to return doors to fully closed position.

END OF SECTION 102122
PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:
   1. Public-use washroom accessories.
   2. Miscellaneous Bathroom Accessories

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include the following:
   1. Construction details and dimensions.
   2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
   3. Material and finish descriptions.
   4. Features that will be included for Project.
   5. Manufacturer's warranty.

B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
   1. Identify locations using room designations indicated.

1.04 INFORMATIONAL SUBMITTALS

A. Warranty: Sample of special warranty requirements listed under this section.

1.05 CLOSEOUT SUBMITTALS

A. Maintenance Data: For toilet and bath accessories to include in maintenance manuals. Manufacturer's service and parts manual shall be provided to the owner upon completion of project.

B. All keyed toilet accessories shall be keyed alike. Six keys shall be provided to the Owner.

1.06 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. Deliver inserts, and anchoring devices set into back-up construction as required to prevent delaying the Work.

1.07 WARRANTY

A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.
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SECTION 102801 - TOILET AND BATHROOM ACCESSORIES  

1. Warranty Period: 5 years from date of Substantial Completion for Toilet Accessories and Hand Dryer units. Mirror reflective surfaces shall be warranted for a period of 15 years against silver spoilage.  

PART 2 - PRODUCTS  

2.01 MATERIALS  

A. Stainless Steel: ASTM A 666, Type 304, 0.031-inch (0.8-mm) minimum nominal thickness unless otherwise indicated. 65-70% post-recycled content.  

B. Galvanized-Steel Sheet: ASTM A 653/A 653M, with G60 (Z180) hot-dip zinc coating.  


D. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.  

E. Mirrors: ASTM C 1048, Tempered Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.  

2.02 WASHROOM ACCESSORIES  

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:  

1. Bobrick Washroom Equipment, Inc.  
2. American Specialties, Inc.  
3. Bradley Corporation  

B. Mirror Units: (AC-01)  

   a. Frame: Type 304 Stainless-steel angle, 0.05 inch (1.3 mm) thick. Mirror shall have a one-piece, type-304 stainless steel angle frame, 3/4" x 3/4" (19 x 19mm) with continuous integral stiffener on all sides and beveled front to hold frame tightly against mirror. All exposed surfaces shall have satin finish with vertical grain  
      1) Corners: Heliarc Welded and ground smooth.  
      2) Hangers: Produce rigid, tamper- and theft-resistant installation, using method indicated below.  
      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.  
      2) Wall bracket of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.  
   b. Size: Provide 18" wide units with mounting height to reflective surface at 40" above finish floor for ADA accessible lavatories.  
   c. All mirror edges shall be protected by plastic filler strips and the back shall be protected by full-size, shock-absorbing, water-resistant, nonabrasive, 3/16" (Smm) thick polyethylene padding.  
   d. Mirror: 1/4" tempered glass mirror with galvanized steel back.  

C. Liquid-Soap Dispensers: (AC-02)  


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a. Description: Designed for dispensing soap in liquid or lotion form with a touch-free dispenser. Unit shall have a locked, hinged stainless steel lid for top filling
b. Mounting: Horizontally oriented, surface mounted.
c. Capacity: 40 fluid oz.
d. Materials: Unit shall be ABS plastic and shall have concealed, vandal-resistant mounting.
e. Lockset: Tumbler type. Keyed alike to all other Toilet Accessories.

D. Toilet Tissue (Roll) Dispensers: (AC-04)
      a. Description: Double-roll dispenser
      b. Mounting: Surface mounted.
      c. Operation: Unit shall be equipped with two theft-resistant, heavy-duty, one-piece, Theft-resistant molded ABS spindles.
      d. Capacity: Designed for up to 5 1/8 inch-diameter tissue rolls.
      e. Material and Finish: Type 304 Stainless steel, No. 4 finish (satin).
      f. Lockset: Tumbler type. Keyed alike to all other Toilet Accessories.
      g. Refill Indicator: Pierced slots at front.

E. Waste Receptacles (AC-08):
      a. Description: Surface-mounted waste receptacle; 18-8, type 304 heavy gauge stainless steel, welded construction with satin finish.
      b. Flange, Skirt and Door shall be fabricated from 18-8, type 304, 22 gauge stainless steel with satin finish.
      c. Mounting: Surface-mounted. Flange shall be drawn and beveled, one-piece, seamless construction. Provide matching filler channels to fill the gap above tile wainscots on each side and top edge of each unit.
      d. Minimum Capacity: 12 gal. (45.4 L) with all handling edges hemmed for safe handling.
      e. Material and Finish: Type 304 Stainless steel, No. 4 finish (satin), welded construction.
      f. Liner: Reusable, vinyl waste-receptacle liner.
      g. Lockset: Semi-concealed tumbler type. Keyed alike to all other locking toilet accessories.

F. Grab Bars: (AC-05)
      a. Mounting: Flanges with concealed vandal resistant fasteners.
      b. Material: Stainless steel, 0.05 inch (1.3 mm) thick.
      c. Finish: Smooth, No. 4 finish (satin) on ends and slip-resistant texture in grip area.
      d. Outside Diameter: 1-1/2 inches (38 mm).
      e. Configurations and Lengths: As indicated on Drawings. Concealed mounting flanges shall be 1/8" (3mm) thick stainless steel plate, 2" x 3-1/8" (50 x 80mm), and equipped with two screw holes for attachment to wall. Flange covers shall be 22 gauge (0.8mm), 3-1/4" (85mm) diameter x 1/2" (13mm) deep, and shall snap over mounting flange to conceal mounting screws and/or wingtip fasteners. Ends of grab bar shall pass through concealed mounting flanges and be heliarc welded to form one structural unit. Clearance between the grab bar and wall shall be 1-1/2" (38mm).
      f. Grab bars shall comply with barrier-free accessibility guidelines (including ADAAG and ANSI 117.1) for structural strength and configurations.
G. Sanitary-Napkin Disposal Units: (AC-06)
3. Door or Cover: 18-8, type 304, 22 gauge stainless steel with satin finish; secured to cabinet with full length stainless steel piano hinge.
4. Receptacle: 1.02 gallon capacity.
5. Material and Finish: Stainless steel, No. 4 finish (satin).

H. Seat-Cover dispenser (AC-07)
1. Basis of Design Product: Bobrick Model B-221
2. Mounting: surface mounted
3. Dimensions: 15 3/4” w, 11” h, 2” d (400 x 280 x 50mm)
4. Allow min. 5” clearance from the bottom of dispenser to top of any horizontal projection for filling dispenser below unit.

2.03 MISCELLANEOUS BATHROOM ACCESSORIES

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
1. Bobrick Washroom Equipment, Inc.
2. Bradley Corporation.
3. Or approved equal.

B. Coat Hooks (AC-09):
1. Basis of Design Product: Bobrick B-2116 or approved equal.
2. One piece Brass casting with Satin nickel plated finish to match stainless steel.
3. Concealed mounting with three stainless steel set screws.
4. 300 # downward force capacity.
5. Unit projects 3 7/16" from wall.
6. Flange diameter: 2 3/4”.

2.04 WARM-AIR DRYERS (AC-03)

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
1. Bobrick Washroom Equipment, Inc.
2. Excel Dryer Inc.
3. Dyson

B. Warm Air Hand Dryers:
1. Basis-of-Design Product: Bobrick, QuietDry TM TrimDry TM, Model No. B-7128 115V, 4” deep surface mounted aluminum die-cast aluminum hand dryer with brushed aluminum cover. Unit shall operate at a sound pressure level of 71 dB (A measured at 39 inches from the source.
   a. Mounting: ADA compliant surface mounted (less than 4” projection).
   b. Operation: Electronic-sensor activated when hands are held under the air-outlet opening and across path of sensor. Dryer stops when hands are removed from the sensor path. Dryer operates only when drying is taking place.
   c. Mount dryer at a height to comply with ADA requirements for operation (48 inches for adults (Universal Design)
   d. Cover Material and Finish: Stainless Steel.
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SECTION 102801 - TOILET AND BATHROOM ACCESSORIES

e. Electrical Requirements: 115V, 60 cycles, 15 amp, 1725 Watts.
f. Warranty: 10-year Limited warranty with 3 year warranty on motor brushes.

2.05 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install accessories according to manufacturers’ written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

B. Grab Bars: Install to withstand a downward load of at least 250 lbf (1112 N), when tested according to ASTM F 446.

3.02 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Remove temporary labels and protective coatings.

C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 102801
SECTION 230593
CLEANING AND TESTING

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE
A. Balancing of Systems: Section 230594.

1.02 SUBMITTALS
A. Quality Control Submittals
   1. Test Reports (Field Tests):
      a. Refrigeration Systems: Submit test results on Refrigeration Systems Pressure - Dehydration Tests
      b. Submit data for each system tested, and/or disinfected; include date performed, description, and test results for each system.

1.03 QUALITY ASSURANCE
A. Regulatory Requirements:
   1. Perform factory testing of factory fabricated equipment in complete accordance with the agencies having jurisdiction.
   2. Perform field testing of piping systems in complete accordance with the local utilities and other agencies having jurisdiction and as specified.

1.04 PROJECT CONDITIONS
A. Protection: During test Work, protect controls, gages and accessories which are not designed to withstand test pressures. Do not utilize permanently installed gages for field testing of systems.

1.05 SEQUENCING AND SCHEDULING
A. Transmit written notification of proposed date and time of operational tests to the GOSR’S Representative at least 5 days in advance of such tests.
B. Perform cleaning and testing Work in the presence of the GOSR Representative.

PART 2 PRODUCTS
2.01 MATERIALS

A. Test Equipment and Instruments: Type and kind as required for the particular system under test.

B. Test Media (refrigerant): As specified for the particular piping or system under test.

C. Cleaning Agent (chemical solution, steam, water): As specified for the particular piping, apparatus or system being cleaned.

PART 3 EXECUTION

3.01 PRELIMINARY WORK

A. Thoroughly clean pipe and tubing prior to installation. During installation, prevent foreign matter from entering systems. Prevent if possible and remove stoppages or obstructions from piping and systems.

B. Thoroughly clean refrigerant pipe prior to pressure or vacuum testing.
   1. Refrigerant Piping:
      a. Only use factory sealed refrigerant piping.
      b. Crimp and braze caps on ends of previously cleaned piping at end of the day if piping was cut.
      c. When brazing, purge lines with dry nitrogen.

3.02 PRESSURE TESTING OF PIPING

A. Piping shall be tight under test and shall not show loss in pressure or visible leaks, during test operations or after the minimum duration of time as specified. Remove piping which is not tight under test; remake joints and repeat test until no leaks occur.

B. General:
   1. Pressure test piping systems inside buildings, at the roughing-in stage of installation, before piping is enclosed by construction Work, and at other times as directed.
   2. Perform test operations in sections as required and directed, to progress the Work in a satisfactory manner and not delay the general construction of the building.
   3. Valve or cap-off sections of piping to be tested, utilizing valves required to be installed in the permanent piping systems, or temporary valves or caps as required to perform the Work.
   4. Isolate existing piping from pressure testing.
5. Pressure test only new piping unless otherwise specified or directed by Owner's Representative.

C. Water Systems:
1. Domestic water (potable cold, domestic hot and recirculation) inside buildings:
   a. Before fixtures, faucets, trim and accessories are connected, perform hydrostatic test at 125 psig minimum for 4 hours.
   b. After fixtures, faucets, trim and accessories are connected, perform hydrostatic retest at 75 psig for 4 hours.

2. Circulating water systems, including propylene glycol solution systems and cold water make-up piping connections to heating, ventilating, air conditioning and refrigeration systems, unless otherwise specified:
   a. Before final connections are made perform hydrostatic test at 1-1/2 times the maximum working pressure, but not less than 125 psig, for 4 hours.
   b. After final connections are made perform hydrostatic retest at a pressure equal to maximum operating system design pressure, but not less than 30 psig, for 4 hours.

D. Condensate Return and Pump Discharge Piping: Before final connections are made perform hydrostatic test at 1-1/2 times maximum working pressure, but not less than 150 psig for one hour

3.03 PRESSURE TESTING OF POWER HOUSE PIPING: NOT USED

3.04 TESTING OF EQUIPMENT, APPARATUS AND APPURTENANCES: NOT USED

3.05 HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS - CLEANING AND OPERATIONAL TESTING: NOT USED

3.06 REFRIGERATION SYSTEMS - TESTING, DEHYDRATION AND CHARGING

A. Leak Test Procedure:
   1. Refrigerant Piping Systems:
      a. Pressurize with dry nitrogen to 50 psig and test for leaks using a bubble type solution.
      b. Release this partial test pressure and correct deficiencies.
      c. Charge system with a trace of refrigerant to 15 psig, then add dry nitrogen until system test pressures are reached and retest for leaks with an electronic leak detector.
d. Release pressure, repair leaks and retest as necessary until no leaks occur.

e. Recover refrigerant used for leak testing.

2. System Test Pressures:
   a. Charge system with dry nitrogen and trace of refrigerant (HFC 134A, HFC 245, HFC 404, HFC 407C, HFC 410A or HFC 507) to 350 psig and retest for leaks with an electronic leak detector. The system must stay at 350 psig pressure for 24 hours to pass the system test pressure test.
   b. Release pressure, repair leaks and retest as necessary until no leaks occur.
   c. Recover refrigerant used for leak testing.

B. Dehydration:
   1. Low and Ultra Low Temperature Refrigeration Systems (-30 degrees F to 32 degrees F):
      a. Following pressure tests, dehydrate each system with a vacuum pump.
      b. Draw and hold an initial vacuum of 800 microns. Break this vacuum by pressurizing with dry nitrogen to 10 psig, and change oil in vacuum pump.
      c. Draw and hold a second vacuum of 500 microns. Break this vacuum by pressurizing with dry nitrogen to 10 psig, and change oil in vacuum pump.
      d. Draw and hold a third vacuum of 250 microns for 8 to 12 hours with an allowable maximum rise of 50 microns. Break this third vacuum by adding liquid refrigerant specified for the equipment to the high side of the system (liquid line).
      e. Verify vacuum obtained with an electronic vacuum gage.
   2. Medium Temperature Refrigeration Systems (33 degrees F to 55 degrees F), and Air Conditioning Systems:
      a. Following pressure tests, dehydrate each system with a vacuum pump.
      b. Draw and hold an initial vacuum of 500 microns. Break this vacuum by pressurizing with dry nitrogen to 10 psig, and change oil in vacuum pump.
      c. Draw and hold a second vacuum of 500 microns. Break this vacuum by pressurizing with dry nitrogen to 10 psig, and change oil in vacuum pump.
      d. Verify vacuum obtained with an electronic vacuum gage.

C. Refrigerant Charging: Follow equipment manufacturer's printed charging directions unless otherwise specified.
   1. Introduce refrigerant of type and quantity required through a filter/drier installed in the temporary charging line.
      a. Purge small amount of liquid out of the system side of the charging hose.
b. Prevent moisture and other contaminants from entering the system.

2. Charge liquid refrigerant through a charging valve provided in the high pressure side of the system.
   a. Small amounts of gaseous refrigerant may be charged through the compressor suction service valve port.

3. No bubbles shall appear at the moisture-liquid indicator when the system is fully charged and operational. Do not overcharge.

4. Record the weight in pounds of refrigerant charged into each system and submit this record to the Owner's Representative.

D. Compressor Oil Charge: Pump oil into the compressor after the last vacuum has been performed. Follow all Manufactures Recommended for oil type and amount to be installed.

E. Adjustments and Operational Testing:
   1. Adjustments: Place the system in operation with automatic controls functioning. Adjust controls and apparatus for proper operation. Test thermometers and gages for accuracy over the entire range. Remove and replace items found defective.
      a. Check belts, fan blades, fittings, TXV bulbs, and electrical connections for tightness before start up.
      b. Check TXV bulb for proper location should be between 8 and 10 o'clock or 2 & 4 o'clock.
      c. Seal off all holes in the condition space as specified.
      d. Provide a point to point control check of the system to ensure that the specified inputs and outputs are receiving the signal from the proper sensors or controlling the proper device.
      e. Set pressure controls and safety controls.
      f. Close or de-energize all solenoids, and start up the system.
      g. Check that all controls and safety switches are operating properly.
      h. Adjust TXV for proper super heat back to the compressors.
      i. Clean TXV strainers as many times as required.
      j. After one week of run time, change the liquid cores if they are the replaceable type.
      k. After one month of run time, replace the liquid cores and compressor suction socks. Replace the liquid cores as required. Clean the TXV's as required.
   2. Operational Test:
      a. Place system in operation, with final connections to equipment and with automatic controls operating, and operate for a minimum of 120 consecutive hours.
      b. Operational test shall prove to the satisfaction of the Owner's Representative that the system can produce the cooling effect required by the drawings and the specifications.
END OF SECTION
SECTION 230594 — BALANCING OF SYSTEMS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. Systems Cleaning, Pressure and Operational Testing: Section 230593.

1.02 SUBMITTALS

A. Quality Control Submittals:
   1. Testing, Adjustment and Balancing Reports:
      a. Air Systems: Submit results balancing of air systems

1.03 QUALITY ASSURANCE

A. Qualifications:
   1. Provide the services of a certified independent agency for the testing, adjustment and balancing of all air distribution and hydronic distribution systems complete with all connected apparatus and equipment. The agency shall be certified by the Associated Air Balance Council Bureau - AABC, Los Angeles, Cal. 90026 or by National Environmental Balancing Bureau - NEBB, Arlington, Va. 22209.
   2. The Work shall be performed by skilled mechanical technicians under the direct supervision of certified personnel in the employ of the independent agency. The supervisor shall be personally certified by the national council or bureau, as approved by the Owner.

1.04 SEQUENCING AND SCHEDULING

A. Scheduling:
   1. Perform environmental systems testing and balancing after cleaning, miscellaneous testing, adjustment and operational testing Work has been completed.
   2. Test and balance system during a period of time when outside temperature conditions will impose a significant load on the system; i.e., summer months for air conditioning system, winter months for heating system. Balance and adjust systems accordingly.
   3. Send written notification to the GOSR a minimum of five days prior to the performance of testing and balancing Work. Perform testing and balancing Work in the presence of the GOSR Representative.
PART 2 PRODUCTS

2.01 TEST EQUIPMENT

A. General Information: Test instruments are included in this specification for information only. Balancing of air systems shall be performed by qualified personnel utilizing company owned test instruments, which will remain the property of the company. Use test instruments which are in first class operating condition, with individual calibration histories to guarantee their accuracy. Test instruments shall be of type and kind as required by the type of system installed. Trade names and manufacturer's names are mentioned in this section for descriptive purposes only; instruments of equivalent range and capabilities may be utilized.

B. Air Balancing Instruments:
   1. Manometers: Inclined with ranges of 0 to 1/4 inch and 0 to 1 inch; Combination inclined and vertical with a range of 0 to 5 inches and U tube type, 18 inches.
   2. Portable “Magnehelic” Draft Gages: Ranges 0 to 1/2 inch, 0 to 1 inch and 0 to 5 inches.
   3. Anemometers: Deflecting vane type with a range of 100 to 3000 fpm, similar to Alnor Velometer Model 6000 BP and 4 inches diameter rotating vane type.
   4. Pitot Tubes: ASHRAE standard type, stainless steel, 5/16 inch diameter, lengths as required.
   5. Sling Psychrometer.
   6. Smoke Candles and Smoke Generator.

PART 3 EXECUTION

3.01 PRELIMINARY WORK

A. Circulating Water Systems: Prior to balancing the system, bleed all air vents so as to completely flood the system; check pumps for proper rotation; clean strainers and set balancing and system stop valves in the full-open position.

B. Ventilating and Air Conditioning Systems: Prior to balancing the system, check fans for proper rotation; check filters for cleanliness and proper installation and set dampers in the normal operating position.

3.02 BALANCING OF CIRCULATING WATER SYSTEM AND ETHYLENE GLYCOL SYSTEMS: NOT USED

3.03 BALANCING OF VENTILATING AND AIR CONDITIONING SYSTEMS
A. Equipment Schedules and Report Sheets:
   1. Prepare itemized air balance schedules for each system listing all air handling units and air outlets for each system. Schedule multi-zone systems by individual zones. Start each schedule from the inlet or the air handling unit and terminate with the last air inlet or outlet device in the system or zone.
   2. Prepare individual air handling unit report sheets, noting manufacturer's published performance data.
   3. Record all test readings, calculations and results.

B. Balancing:
   1. Inspect All Equipment: Establish a definite operational test condition for test and air balance purposes. In accordance with test condition selected, such as minimum fresh air dampers open, turn on all air handling systems in the building, including all exhaust systems.
   2. Balance a system starting with the air handling unit (ceiling cassette/ERV unit). Check fan speed, using a tachometer with a self-timing device and the power reading of the fan motor using a volt-amp meter. Calculate the actual brake horse power from the tachometer and volt-amp meter readings. Compare the actual fan speed reading and the motor power reading, with the air handling unit manufacturer's published performance data, and if they check within reasonable limits, make duct velocity readings on the main ducts. Drill holes in the main ducts and using a velocity measuring instrument take velocity readings. Take velocity readings in each zone duct of a multi-zone system and in addition, in the main branch ducts of a reheat type system. Close and seal test holes with metal snap hole plugs and duct tape. Calculate the cfm of the ducts. Establish the total air for the fan or system under test. Compare the design data with the test results, and if the total air is high or low, adjust the fan speed accordingly. Repeat the described test procedure for all air handling units, including all supply air, return air and exhaust air apparatus. With the total air for the system established, use the same duct velocity check system for adjusting the main splitter dampers or other volume control devices for the various branches of the system. Test and adjust the individual air inlet or outlet devices, after the main ducts, zone ducts and branch ducts have been set at design conditions. Adjust individual air inlet and outlet devices, such as registers and diffusers, for air pattern and volume, in the manner recommended by the manufacturer of the devices. The total cfm of all inlets or outlets shall equal the total cfm of all branches, which in turn shall equal the total air volume of the air handling units. The system is balanced, when the results of the specified test procedures check with the design data, that is, fan speed and horsepower; total air by velocity readings and total air by inlet or outlet volume.

END OF SECTION
SECTION 230719

INSULATION

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. Pipe Hangers and Supports: Section 230529.

1.02 ABBREVIATIONS


B. K: Thermal Conductivity, i.e., maximum Btu per inch thickness per hour per square foot.

C. pcf: Pounds per cubic foot.

D. PVC: Polyvinylchloride.

1.03 SUBMITTALS

A. Product Data:
   1. Manufacturer's catalog sheets, specifications and installation instructions for insulation materials and jacket materials.
   2. Materials Schedule: Itemize insulation materials and thicknesses for each specified application in Insulation Material Schedules in Part 3 of this Section. Where optional materials are specified, indicate option selected.

B. Quality Control Submittals:
   1. Installers Qualification Data:
      a. Name of each person who will be performing the Work, and their employer's name, business address and telephone number.
      b. Furnish names and addresses of the required number of similar projects that each person has worked on which meet the qualifications.

1.04 QUALITY ASSURANCE

A. Qualifications: The persons installing the Work of this Section and their Supervisor shall be personally experienced in mechanical insulation work and shall have been regularly employed by a company installing mechanical insulation for a minimum of 5 years.

B. Regulatory Requirements:
 SECTION 230719 - INSULATION

1. Insulation installed inside buildings, including duct lining materials, laminated jackets, mastics, sealants and adhesives shall have a Fire Spread/Smoke Developed Rating of 25/50 or less based on ASTM E 84.

PART 2 PRODUCTS

2.01 INSULATION

A. Fibrous Glass (Mineral Fiber) Insulation: Composed principally of fibers manufactured from rock, slag, or glass, with or without binders, and asbestos free.

4. Block or Board Insulation: Minimum density 3.0 pcf and 6.0 pcf as specified; ASTM C 612:
   a. Type IA or IB (Suitable for Temperatures Up to 450 degrees F): K of 0.26 at 75 degrees F.

6. Blanket Insulation:
   a. For Ductwork (Suitable for Temperatures Up to 450 Degrees F): Minimum density 1.0 pcf, K of 0.31 at 75 degrees F; ASTM C 553, Type II.
   b. For Breeching (Suitable for Temperatures up to 1200 degrees F): Minimum density 8 pcf, K of 0.55 at 400 degrees F, metal mesh faced one side; ASTM C 553, Type VII.

B. Flexible Elastomeric Foam Insulation:
   1. FM tested and approved, meeting the following:
      a. Maximum Water Vapor Transmission: 0.10 perm - inch based on ASTM E 96, Procedure A.
      b. K of 0.27 at 75 degrees F based on ASTM C 518 or C 177.
      c. Fire Spread/Smoke Developed Rating: 25/50 or less based on ASTM E 84.

2. Pipe Insulation: ASTM C 534, Type I.
4. Polyethylene and polyolefin insulation is not acceptable.

C. Cements:
   2. Fibrous Glass Hydraulic Setting Thermal Insulating and Finishing Cement: ASTM C 449/C 449M.

2.02 ADHESIVES, MASTICS, AND SEALERS

A. Lagging Adhesive (Canvas Jackets): Childers’ CP-50AMV1, Epolux's Cadalag 336, Foster's 30-36.

B. Vapor Lap Seal Adhesive (Fibrous Glass Insulation): Childers’ CP-82, Epolux's Cadoprene 400, Foster's 85-60 or 85-20.
SECTION 230719 - INSULATION

C. Vapor Barrier Mastic (Fibrous Glass Insulation): Permeance shall be .03 perms or less at 45 mils dry per ASTM E 96. Childers’ CP-34, Epolux's Cadalar 670, Foster's 30-65.

D. Adhesive (Flexible Elastomeric Foam): Armstrong’s 520, Childers’ CP-82, Epolux's Cadoprene 488, Foster's 85-75. 5 gallon cans only.

H. Reinforcing Membrane: Childers’ Chil Glas #10, Foster Mast a Fab, Pittsburgh Corning PC 79

2.03 MISCELLANEOUS MATERIALS

A. Insulation Fasteners for Ductwork and Equipment:
   2. Type: Weld pins, complete with self-locking insulation retaining washers.

B. Pressure Sensitive Tape for Sealing Laminated Jackets:
   2. Type: Same construction as jacket.

C. Wire, Bands, and Wire Mesh:
   1. Binding and Lacing Wire: Nickel copper alloy or copper clad steel, gage as specified.
   2. Bands: Galvanized steel, 1/2 inch wide x 0.015 inch thick, with 0.032 inch thick galvanized wing seals.
   3. Wire Mesh: Woven 20 gage steel wire with 1 inch hexagonal openings, galvanized after weaving.

D. Metal Corner Angles: Galvanized steel, 2 x 2 inch 28 gage.

E. Reinforcing Membrane: Glass or Polyester, 10 x 10 mesh. Alpha Associates Style 59, Childer's Chil-Glas, Foster's MAST-A-FAB.

PART 3 EXECUTION

3.01 PREPARATION

A. Perform the following before starting insulation Work:
   1. Install hangers, supports and appurtenances in their permanent locations.
   2. Complete testing of piping, ductwork, and equipment.
   3. Clean and dry surfaces to be insulated.

3.02 INSTALLATION, GENERAL

A. Install the Work of this Section in accordance with the manufacturer's printed installation instructions unless otherwise specified.

B. Piping Insulation: Provide continuous insulation and jacketing when passing thru interior wall, floor, and ceiling construction.
At Through Penetration Firestops: Coordinate insulation densities with the requirements of approved firestop system being installed. See Section 078400.

a. Insulation densities required by approved firestop system may vary with the densities specified in this Section. When this occurs use the higher density insulation.

Do not intermix different insulation materials on individual runs of piping.

### 3.03 INSTALLATION AT HANGERS AND SUPPORTS

A. Reset and realign hangers and supports if they are displaced while installing insulation.

B. Install high density jacketed insulation inserts at hangers and supports for insulated ductwork, piping, and equipment.

C. Insulation Inserts For Use with Fibrous Glass Insulation:

1. Ductwork: Install 6 pcf density jacketed fibrous glass board, same thickness as adjoining insulation, sized for full bearing on supporting trapeze member, and as required to enable abutting to adjoining insulation and overlapping of jacketing.

2. Piping: Where clevis hangers are used, install insulation shields and high density jacketed insulation inserts between shield and pipe.
   a. Where insulation is subject to compression at points over 180 degrees apart, e.g. riser clamps, U-bolts, trapezes, etc.; fully encircle pipe with 2 protection shields and 2 high density jacketed fibrous glass insulation inserts within supporting members.
      1) Exception: Locations where pipe covering protection saddles are specified for hot service piping, 6 inch and larger.

### 3.04 INSTALLATION OF FLEXIBLE ELASTOMERIC FOAM INSULATION

A. Where possible, slip insulation over the pipe, and seal butt joints with adhesive.

   1. Where the slip-on technique is not possible, slit the insulation and install.
   2. Re-seal with adhesive, making sure the mating surfaces are completely joined.

B. Insulate fittings and valves with miter cut sections. Use templates provided by the manufacturer, and assemble the cut sections in accordance with the manufacturer's printed instructions.

   1. Insulate threaded fittings and valves with sleeved fitting covers. Overlap and seal the covers to the adjoining pipe insulation with adhesive.

C. Carefully mate and seal with adhesive all contact surfaces to maintain the integrity of the vapor barrier of the system.
NY Rising – Governor’s Office of Storm Recovery  
GOSR Work Order Number: NTF-1-DES  
Edgewater Park Volunteer Fire Department — Storm Hardening and Abatement  

SECTION 230719 - INSULATION

D. Piping Exposed Exterior to a Building, Totally Exposed to the Elements:  
1. Apply flexible elastomeric foam insulation to piping with adhesive.  
2. Apply reinforcing membrane around piping insulation with adhesive or mastic.  
5. Seal joints with sealant and secure with preformed aluminum bands.

3.05 INSTALLATION OF DUCTWORK INSULATION

A. Fibrous Glass Blanket Insulation Application:  
1. Cut insulation to stretch-out dimensions as recommended by insulation manufacturer.  
2. Remove 2 inch wide strip of insulation material from the jacketing on the longitudinal and circumferential joint edges to form an overlapping staple/tape flap.  
3. Install insulation with jacketing outside so staple/tape flap overlaps insulation and jacketing on other end.  
4. Butt ends of insulation tightly together.  
   a. Rectangular and Square Ductwork: Do not compress insulation at duct corners.  
5. Staple longitudinal and circumferential joints with outward clinching staples minimum 6 inches on center, and seal with pressure sensitive sealing tape.  
6. Cut off protruding ends of fasteners flush with insulation surface and seal with pressure sensitive sealing tape.  
7. Install duct insulation fasteners on bottom side of horizontal duct runs, when bottom dimension of the duct is in excess of 24 inches in width.  
8. Install duct insulation fasteners on sides of duct risers having a dimension over 24 inches in size.  
9. Seal tears, punctures, and penetrations of insulation jacketing with sealing tape and coat with vapor barrier mastic.  
10. Secure insulation to ductwork with fasteners spaced in accordance with the following schedule:

<table>
<thead>
<tr>
<th>DUCT DIMENSION</th>
<th>SPACING OF FASTENERS (MINIMUM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 24 inches</td>
<td>None required.</td>
</tr>
</tbody>
</table>

3.06 FIELD QUALITY CONTROL

A. Field Samples: The Owner's Representative, may at their discretion, take field samples of installed insulation for the purpose of checking materials and application. Reinsulate sample cut areas.

3.07 COLD SERVICE INSULATION MATERIAL SCHEDULE
## SECTION 230719 - INSULATION

### TYPE

<table>
<thead>
<tr>
<th>SERVICE AND TEMPERATURES</th>
<th>INSULATION MATERIAL</th>
<th>PIPE SIZES (INCHES)</th>
<th>MINIMUM (NOMINAL) INSULATION THICKNESS (INCHES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A &amp; B Refrigerants, Brine, and Fluids below 40 F.</td>
<td>Flex. Elastomeric Foam</td>
<td>1 &amp; less</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-1/4 and Up</td>
<td>1-1/2</td>
</tr>
<tr>
<td>C Chilled Water and other fluids (except domestic cold water) 40 F to 80 F.</td>
<td>Flex. Elastomeric Foam or Fibrous Glass</td>
<td>1-1/2 &amp; less</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Over 1-1/2</td>
<td>1-1/2</td>
</tr>
<tr>
<td>D Domestic cold water, and as specified. 33 F to 80 F.</td>
<td>Flex. Elastomeric Foam or Fibrous Glass</td>
<td>All Sizes</td>
<td>1/2</td>
</tr>
</tbody>
</table>

**Notes:**
All piping insulation shall comply with 2016 NYC Energy Code.
Type D Insulation Materials: In addition to the services shown on the schedule above, use Type D materials and thicknesses for the following:

a. Condensate Drain Piping:
   1) Piping connected to drain pans under cooling coils within unit enclosure, except where over drain pans.
   2) Horizontal condensate drain piping outside unit enclosures.
   3) Vertical condensate drain piping of less than one story immediately following horizontal run.

### 3.08 DUCTWORK SERVICE INSULATION MATERIAL SCHEDULE

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>SERVICE</th>
<th>INSUL. MATERIAL</th>
<th>MINIMUM INSUL. THICKNESS</th>
<th>JACKET TYPE</th>
<th>MINIMUM REQUIRED R VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concealed, inside building insul. envelope in unconditioned spaces (in shafts, ceilings, walls, and floors)</td>
<td>Air Conditioning Supply and Returns Under 65 F, 100% Outside Air, Heating Supply Over 85 F. Returns with Temp. Diff. With Ambient Greater than 15 degrees F</td>
<td>Fibrous Glass Blanket</td>
<td>2</td>
<td>I or II</td>
<td>R-5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fibrous Glass Board</td>
<td>1-1/2</td>
<td>I or II</td>
<td></td>
</tr>
</tbody>
</table>

END OF SECTION
SECTION 233113

METAL DUCTWORK

PART 1 GENERAL

1.01 REFERENCES

A. American Conference of Governmental Industrial Hygienists (ACGIH).

B. National Fire Protection Association (NFPA).

C. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA).

1.02 PERFORMANCE REQUIREMENTS: NOT USED

1.03 SUBMITTALS

A. Shop Drawings:
   1. Layouts for areas in which it may be necessary to deviate substantially from layout shown on the Drawings. Show major relocation of ductwork and major changes in size of ducts. Minor transitions in ductwork, if required due to job conditions, need not be submitted as long as the duct area is maintained.
   2. Layout and fabrication details for cooking equipment exhaust ductwork.
   3. Layouts of mechanical equipment rooms and penthouses.
   4. Details of intermediate structural steel members required to span main structural steel for the support of ductwork.
   5. Method of attachment of duct hangers to building construction.
   6. Coordinate shop drawings with related contracts prior to submission.

B. Product Data: Material, gage, type of joints, sealing materials, and reinforcing for each duct size range, including sketches or SMACNA plate numbers for joints, method of fabrication and reinforcing. Include ACGIH figure numbers for hoods if applicable.

1.04 QUALITY ASSURANCE

A. SMACNA: Gages of materials, fabrication, reinforcement, sealing requirements, installation, and method of supporting ductwork shall be in accordance with the following SMACNA manuals, unless otherwise shown or specified:

B. Conform to the applicable NFPA requirements.
PART 2 PRODUCTS

2.01 MATERIALS

A. Sheet Metal:
   2. Copper: ASTM B-370.
   5. Stainless Steel: AISI Types 302, 304 and 316, as specified.

B. Duct Hangers:
   1. Strap Hangers: Same material as ducts, except that hangers for stainless steel ducts in unfinished spaces may be galvanized steel.
   2. Rod Type Hangers: Mild low carbon steel, unless otherwise specified; fully threaded or threaded each end, with 2 removable nuts each end for positioning and locking rod in place. Unless stainless steel, galvanized or cadmium plated; shop coat with metal primer.

C. Miscellaneous Fasteners and Upper Hanger Attachments:
   1. Sheet Metal Screws, Machine Bolts and Nuts: Same material as duct, unless otherwise specified.
   2. Concrete Inserts: Steel or malleable iron, galvanized; continuously slotted or individual inserts conforming with MSS SP-58, Types 18 & 19, Class A-B.
   4. Metal Deck Ceiling Bolts: B-Line Systems, Inc.’s Fig. B3019.
   7. Stainless Steel Shapes and Plates: ASTM A276 and ASTM A666.
   8. Machine Bolt Expansion Anchors:
      a. Non-caulking single unit type: FS FF-S-325, Group II, Type 2, Class 2, Style 1.
      b. Non-caulking double unit type: FS FF-S-325, Group II, Type 2, Class 2, Style 2.
      c. Self-drilling type: FS FF-S-325, Group III, Types 1 and 2.

2.02 FABRICATION - GENERAL

A. Fabricate ductwork from galvanized sheet metal
NY Rising – Governor’s Office of Storm Recovery  
GOSR Work Order Number: NTF-1-DES  
Edgewater Park Volunteer Fire Department — Storm Hardening and Abatement

SECTION 233113 — METAL DUCTWORK 

2.03 FABRICATION OF STAINLESS STEEL DUCTS: NOT USED 

2.04 REGISTERS AND GRILLES INSTALLED IN EXPOSED DUCTWORK: NOT USED 

2.05 AIR DIFFUSERS INSTALLED IN EXPOSED DUCTWORK: NOT USED 

2.06 VIBRATION ISOLATION FOR DUCTWORK: NOT USED 

2.07 SEISMIC RESTRAINT SYSTEM FOR DUCTWORK: NOT USED 

PART 3 EXECUTION 

3.01 INSTALLATION - GENERAL 

A. Install ductwork to allow maximum headroom. Properly seam, brace, stiffen, support and render ducts mechanically airtight. Adjust ducts to suit job conditions. Dimensions may be changed as approved, if cross sectional area is maintained. 

B. Pitch horizontal ducts connected to hoods downward toward hood not less than 1 inch in 10 feet. 

C. Provide necessary transformation pieces, and flexible fabric connections for ductwork connected to air handling equipment or air inlet and outlet devices. 

3.02 SEALING SEAMS, JOINTS, AND PENETRATIONS 

A. Seal ductwork in accordance with the SMACNA Manual except for the following: 

1. Ductwork Specified to be Insulated: Conform with Seal Class A for all pressure classes. 

B. Duct Sealants: Water based, non-fibrated: Foster 32-19, Childers CP-146, Duro Dyne SAS. 

3.03 HANGERS FOR DUCTS, UNDER 2 INCHES W.G. 

A. Install hangers for ducts as specified in the SMACNA Manual, with the following exceptions: 

1. Rectangular ducts up to 42 inches wide, not having welded or soldered seams, and supported from overhead construction; extend strap hangers down over each side of the duct and turn under bottom of duct a minimum of 2 inches. Secure hanger to duct with 3 full thread sheet metal screws, one in the bottom and 2 in the side of the duct. 

2. Rectangular ducts 43 inches wide and over, and all sizes of duct with welded or soldered seams, and supported from overhead construction; use trapeze hangers. 

233113- 3
3.04 HANGERS FOR DUCTS, 2 INCHES W.G. AND OVER

A. Install hangers for ducts as specified in the SMACNA Manual, with the following exceptions:
   1. Support rectangular ducts, regardless of size, by means of trapeze hangers, framed all four sides. Provide minimum 1 x 1 x 1/8 inch angle iron framing for duct having a maximum side dimension up to and including 36 inches in size. Install framing snug to all four sides of duct.

3.05 UPPER HANGER ATTACHMENTS

A. General:
   1. Secure upper hanger attachments to structural steel or steel bar joists wherever possible.
   2. Do not use drive-on beam clamps, flat bars or bent rods, as upper hanger attachments.
   3. Do not attach hangers to steel decks which are not to receive concrete fill.
   4. Do not attach hangers to precast concrete planks less than 2-3/4 inches thick.
   5. Avoid damage to reinforcing members in concrete construction.
   6. Metallic fasteners installed with electrically operated or powder driven tools may be used as upper hanger attachments, in accordance with the SMACNA Manual, with the following exceptions:
      a. Do not use powder driven drive pins or expansion nails.
      b. Do not attach powder driven or welded studs to structural steel less than 3/16 inch thick.
      c. Do not support a load, in excess of 250 lbs from any single welded or powder driven stud.
      d. Do not use powder driven fasteners in precast concrete.

B. Attachment to Steel Frame Construction: Provide intermediate structural steel members where required by ductwork support spacing. Select steel members for use as intermediate supports based on a minimum safety factor of 5.
   1. Secure upper hanger attachments to steel bar joists at panel points of joists.
   2. Do not drill holes in main structural steel members.

C. Attachment to Concrete Filled Steel Decks:
   1. New Construction: Install metal deck ceiling bolts.
   2. Existing Construction: Install welding studs (except at roof decks).
   3. Do not attach hangers to decks less than 2-1/2 inches thick.
SECTION 233113 — METAL DUCTWORK

D. Attachment to Hollow Block or Hollow Tile Filled Concrete Decks:
   1. New Construction: Omit block or tile and pour solid concrete with cast-in-place inserts.
   2. Existing Construction: Break out block or tile to access, and install machine bolt anchors at highest practical point on side of web.

VERIFY WITH STRUCTURAL ENGINEERING THAT TRUSSES IN SUBPARAGRAPH BELOW ARE DESIGNED TO ACCOMMODATE DUCTWORK LOADING.

   1. Where wood trusses are approved to support ductwork, hangers may be attached only to the bottom chord. Method of attachment must be specifically approved.
   2. Do not secure hanger attachments to nailing strips resting on top of steel beams.

3.06 DUCT RISER SUPPORTS, UNDER 2 INCHES W.G.

   A. Support vertical round ducts by means of double-ended split steel pipe riser clamps bearing on floor slabs or adjacent structural members, at every other floor through which the riser passes.

   B. Unless otherwise specified or shown on the drawings, support vertical rectangular ducts by means of two steel angles, secured to duct and resting on floor slab or adjacent structural steel member, at every other floor through which the duct passes. Size supports as follows:

<table>
<thead>
<tr>
<th>MAXIMUM SIDE DIMENSION (inches)</th>
<th>SUPPORT ANGLE (inches)</th>
<th>SECURE TO DUCT WITH</th>
<th>MINIMUM BEARING AT EACH END (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>1 x 1 x 1/8</td>
<td>Screws</td>
<td>2</td>
</tr>
</tbody>
</table>

3.07 DUCT RISER SUPPORTS, 2 INCHES W.G. AND OVER

   A. Support vertical round ducts by means of double-ended split steel pipe riser clamps welded to the ducts and bearing on floor slabs or adjacent structural members, at every other floor through which the riser passes.

   B. Support vertical rectangular ducts by means of two steel angles or channels, anchor bolted to floor slab or adjacent structural member at every other floor through which the riser passes. Secure steel angles or channels to a transverse joint by means of 3/8 inch bolts, or by welding. Size supports as follows:

<table>
<thead>
<tr>
<th>MAXIMUM SIDE DIMENSION (inches)</th>
<th>SUPPORT ANGLE (inches)</th>
<th>SUPPORT CHANNEL (inches)</th>
<th>MINIMUM BEARING AT EACH END (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>1 x 1 x 1/8</td>
<td>1 x 1/2 x 1/8</td>
<td>2</td>
</tr>
</tbody>
</table>
SECTION 233113 — METAL DUCTWORK

3.08 VIBRATION ISOLATION FOR DUCTWORK

A. Install vibration isolation in accordance with the manufacturer's printed installation instructions, unless otherwise specified.

END OF SECTION
PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. Metal Ductwork: Section 233113.

1.02 REFERENCES

A. ACGIH: American Conference of Governmental Industrial Hygienists.
D. SMACNA: Sheet Metal and Air Conditioning Contractors National Association, Inc.
E. UL: Underwriters Laboratories, Inc.

1.03 SUBMITTALS

A. Product Data: Catalog sheets, diagrams, standard schematic drawings, and installation instructions for each manufactured product. Submit SMACNA Figure Numbers for each shop fabricated item.

B. Samples: When directed, submit one complete unit for each type of proposed air inlet and outlet device. Approved samples will be delivered to the job site for installation.

1.04 QUALITY ASSURANCE

A. Regulatory Requirements:
   1. Unless otherwise shown or specified, comply with the applicable requirements of the following:
      a. SMACNA: Gages of materials, fabrication, sealing, and installation shall be in accordance with the SMACNA Manuals.
      1) HVAC Duct Construction Standards.
      b. UL: Standards No. UL181, UL555, and UL555S.

1.05 MAINTENANCE

A. Special Tools:
233300 — DUCTWORK ACCESSORIES

1. One bar deflection key for every five supply grilles and/or every five return grilles.
2. One operator key for every five supply registers and/or every 5 return or exhaust registers.
3. Two keys or socket wrenches for each type of damper adjustment screw or device on manual damper regulators.

PART 2 PRODUCTS

2.01 GRILLES AND REGISTERS

A. Unless otherwise specified, fabricate grille and register faces, and frames of steel with factory applied white baked-on enamel.

B. Supply Grilles: Adjustable, double deflection type.
   1. Grille Face: 20 gage construction of same material as bars/vanes.
   2. Face and Rear Bars/Vanes: Installed in grille face.
      a. Bars/vanes individually adjustable and front pivoting to any desired setting by means of bar deflection key.
      b. Nominal Bar/Vane Spacing: 0.66 inch or 0.75 inch on center.

C. Exhaust or Return Grilles: Fixed, single deflection type.
   1. Grille Face: 20 gage construction of same material as bars/vanes.
   2. Face Bars/Vanes: Installed in grille face.
      a. Deflection Angle: 20 to 55 degrees.
      b. Nominal Bar/Vane Spacing: 0.66 inch or 0.75 inch on center.
      c. Sidewall grilles shall have horizontal face bars/vanes.

D. Supply Registers: Adjustable, double deflection type.
   1. Register Face: 20 gage construction of same material as bars/vanes.
   2. Face and Rear Bars/Vanes: Installed in register face.
      a. Bars/vanes individually adjustable and front pivoting to any desired setting by means of bar deflection key.
      b. Nominal Bar/Vane Spacing: 0.66 inch or 0.75 inch on center.
   3. Damper Assembly: Opposed multi-blade type consisting of frame, blades, and key operated movement of the locking type.
      a. Operators: Key operated type projecting through frame or screwdriver slot. Operator keys are removable or may be permanently driven in place, as directed.
      b. Construction:
         1) For use with Aluminum or Stainless Steel Register Faces: Aluminum with etched or acrylic finish.
         2) For use with Factory Painted Register Faces: Galvanized steel factory finished with baked on black enamel, unless otherwise approved by the Owner's Representative.
G. Exhaust or Return Registers: Fixed single deflection type.
   1. Register Face: 20 gage construction of same material as bars.
   2. Face Bars/Vanes: Installed in register face.
      a. Deflection Angle: 20 to 55 degrees.
      b. Nominal Bar/Vane Spacing: 0.66 inch or 0.75 inch on center.
      c. Sidewall registers shall have horizontal face bars/vanes.
   3. Damper Assembly: Opposed multi-blade type consisting of frame or screwdriver slot blades, and key operated movement of the locking type.
      a. Operators: Key operated type projecting through frame or screwdriver slot. Operator keys are removable or may be permanently driven in place, as directed.
      b. Construction:
         1) For use with Aluminum or Stainless Steel Register Faces: Aluminum with etched or acrylic finish.
         2) For use with Factory Painted Register Faces: Galvanized steel factory finished with baked on black enamel, unless otherwise approved by the Owner's Representative.

2.01 AIR DIFFUSERS

A. Unless otherwise specified, fabricate diffusers of steel with factory-applied finish as follows:
   1. Prime coat for installation in walls and gypsum board, hard plaster or acoustic plaster ceilings specified to be painted.
   2. Baked-on white enamel for installation in splined acoustic ceilings, metal pan ceilings and suspended lay-in tile ceilings.

B. General:
   1. Roll or round and reinforce all exposed edges of diffusers.
   2. Internal diffuser parts shall be readily removable to permit cleaning and access to ducts.
   3. Design removable parts and assemblies so that they cannot be reassembled in a manner that would produce an incorrect air distribution pattern.
   4. Secure internal assemblies with fasteners that allow removal without use of special tools.
   5. Do not use neck or duct connection sizes indicated to size diffusers.

D. Square and Rectangular Diffusers:
   1. Complete with volume control damper and adjustable equalizing grid, fabricated of same material and with same finish as diffuser.
   2. Damper shall be adjustable by means of operator handle and rod device, which is designed to be locked in any position, and is operable from diffuser face.

2.03 COMBINATION DAMPERS AND LOUVERS: NOT USED
2.04 DAMPER ACTUATORS


B. Electric/Electronic Type:
1. Positive positioning, spring return, and sized in accordance with actuator manufacturer's printed recommendations for each damper size.
2. Actuators for outdoor dampers shall fail closed upon loss of electric power.
3. Actuator Response: Linear in response to sensed load.
4. Voltage: 120 VAC or 24 VAC.
5. Actuator Timing:
   a. Open Damper: 90 seconds.
   b. Spring Return: 30 seconds.
   c. Spring Close: 30 seconds.

C. Hydraulic, thermodynamic and battery type actuators are not acceptable.

2.05 TURNING VANE ASSEMBLIES: NOT USED

2.06 FLEXIBLE CONNECTIONS — FABRIC: NOT USED

2.07 GASKET MATERIAL

A. Registers, Grilles, and Diffusers Installed in Exposed, Uninsulated Ductwork: 1/4 inch thick felt or sponge rubber material, of width as required by flange.

B. Flanged Joints in Ducts: 1/8 inch thick reinforced inert plastic of the self-conforming type, of same width as flange.
1. Exception: Where flanged connections in cooking equipment exhaust ductwork is allowed by NFPA 96, make up joints with Fibrefrax Grade 110 Paper by Carborundum Co.

2.08 SEALANTS


B. U. L., Listed adhesives (liquid or mastic), scrim, tapes, or combinations thereof, as required for pressure class; suitable for system operating temperatures; compatible with media conveyed within, insulation (if any), and ambient conditions.
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SECTION 233300 — DUCTWORK ACCESSORIES

2.09 FLEXIBLE DUCT

A. Conform to NFPA 90A, and UL181 Class I:

1. Uninsulated Type: Factory assembled duct consisting of continuous, seamless, metalized polyester tear resistant duct with encapsulated steel helix.

2. Pre-insulated Type: Factory assembled.
   a. Internal Core: Continuous material suitable for service, with encapsulated steel helix that completely shields fiberglass insulation from air stream.
   b. Outer Vapor Barrier Jacket: Seamless, tear resistant metalized polyester.

3. Operating Conditions:
   a. Maximum Operating Temperature: ___100___ degrees F.
   b. Maximum Operating Static Pressure (Positive): + 0.125 _____ inch wg.
   c. Maximum Operating Static Pressure (Negative): 0.125 _____ inch wg.
   d. Maximum Air Velocity: 1200 fpm.

4. Metal Clamps: Stainless steel with cadmium plated hex bolt.

2.11 DUCT ACCESS DOORS

A. Prefabricated or Fabricated at Site: Minimum 12 x 12 inch size, of same material and finish as duct unless otherwise shown or specified.
   1. For uninsulated duct designed for under two inches wg: Fabricate single panel door of same gage as duct, with all edges folded, size door to overlap opening perimeter by one inch.
   2. For insulated duct and duct designed for two inches wg and over: Fabricate hollow metal doors in accordance with the SMACNA Manual. Fill void in doors for insulated duct with thermally equivalent insulation.
      a. Exception: Where access doors are required by NFPA 96 in cooking equipment exhaust ductwork, gasket with Fibrefrax Grade 110 paper by Carborundum Co.

B. Access Door Hardware:
   1. Piano Hinges: Galvanized steel with brass pins, continuous type, full height of door.
   2. Butt Hinges: Galvanized steel with brass pins, approximately 2 inches x 1-9/16 inches wide for doors under 24 inches high and 3 inches x 2 inches wide for doors over 24 inches and higher.
SECTION 233300 — DUCTWORK ACCESSORIES

3. Sash Locks: Galvanized, cadmium plated, or aluminized steel or cast aluminum.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

A. Unless otherwise shown or specified, install the Work of this Section in accordance with the manufacturer's printed installation instructions and the SMACNA Manual.

3.02 FLEXIBLE FABRIC CONNECTORS (INSTALLATION): NOT USED

3.03 ACCESS DOORS

A. Install gasketed access doors in ductwork at each of the following:
   1. Motor operated dampers.
   3. Fire dampers.
   5. All locations where operating parts of any kind are installed and elsewhere as indicated.
   6. In-line damper actuators installed in air stream.

B. Access doors are not required, where a manually operated damper has an exposed damper regulator, with an indicating quadrant.

END OF SECTION
SECTION 233421 — POWER ROOF VENTILATORS

PART 1 GENERAL

1.01 ITEMS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

A. Deliver the following to the Construction Work Contractor for installation:
   1. Roof curbs including detailed dimensional data.

1.03 SUBMITTALS

A. Product Data: Manufacturer's catalog sheets, standard schematic drawings, specifications and installation instructions for each size unit, curb, and extended bases (if used).

B. Detailed Dimensional Data: If roof curb is not the product of the ventilator manufacturer, provide detailed dimensional data confirming the ventilator and curb match exactly.

1.04 QUALITY ASSURANCE

A. Regulatory Requirements:
   1. Ventilators shall be licensed to bear the AMCA seal for sound and air.
   2. All electrical components shall be UL listed.

PART 2 PRODUCTS

2.02 UPBLAST TYPE POWER ROOF VENTILATORS

A. Housing: Weatherproof heavy gage spun aluminum construction with large rolled bead for strength, galvanized base, and rigid galvanized steel internal supports
   1. Housing does not provide any internal structural support.
   2. Equipped with oversized electrical conduit chase thru curb cap and into motor compartment.
   3. Pre-wired to junction box mounted in motor compartment
   4. Equipped with electrical disconnect switch.

B. Fan Assembly:
   1. Centrifugal Fan Wheel: Statically and dynamically balanced backward inclined type constructed of aluminum, spark resistant, non overloading, and matched with deeply spun venturis.
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2. Direct Drive Motor: Continuous duty, permanently lubricated, multi-speed, with thermal overload protection, and mounted out of the main airstream.

D. Disconnect Switch: UL approved for the use, non-fused safety type disconnect switch, located under the fan housing. Factory installed wiring run in flexible metal conduit.

E. Dampers:
   1. Types:
      a. Automatic self-opening back draft type, with spring actuated return.
      b. Low Leakage motorized type.
   2. Frame: Steel.
   4. Bearings: Bronze or nylon.

F. Insect/Bird Screen: Aluminum.


2.02 ROOF CURBS

A. Type: Factory fabricated, braced and stiffened to form a rigid weatherproof unit.

1. Construction:

USE SUBPARAGRAPH BELOW WHEN DUCTWORK IS BROUGHT UP THRU CURB.

   a. Single wall welded construction.

2. Materials:

PART 3 EXECUTION

3.01 INSTALLATION

A. Install roof curbs in complete accordance with the manufacturer's printed installation instructions and approved shop drawings (if any).

B. Install power roof ventilators on roof curbs, with approved fastening devices, in accordance with manufacturer's printed installation instructions.

C. Adjust damper linkages for proper damper operation.

END OF SECTION
PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Catalog sheets, specifications and installation instructions.
   1. For fire rated construction, prove that materials and installation methods proposed for use are in accordance with the listing requirements of the classified construction.

PART 2 PRODUCTS

2.01 RACEWAYS, FITTINGS AND ACCESSORIES

A. Rigid Ferrous Metal Conduit: Steel, hot dipped galvanized on the outside and inside, UL categorized as Rigid Ferrous Metal Conduit (identified on UL Listing Mark as Rigid Metal Conduit - Steel or Rigid Steel Conduit), by Allied Tube & Conduit Corp., LTV Copperweld, or Wheatland Tube Co.

B. Intermediate Ferrous Metal Conduit: Steel, galvanized on the outside and enameled on the inside, UL categorized as Intermediate Ferrous Metal Conduit (identified on UL Listing Mark as Intermediate Metal Conduit or IMC), by Allied Tube & Conduit Corp., LTV Copperweld, or Wheatland Tube Co.

C. Electrical Metallic Tubing: Steel, galvanized on the outside and enameled on the inside, UL categorized as Electrical Metallic Tubing (identified on UL Listing Mark as Electrical Metallic Tubing), by Allied Tube & Conduit Corp., LTV Copperweld, or Wheatland Tube Co.

D. Flexible Metal Conduit: Galvanized steel strip shaped into interlocking convolutions, UL categorized as Flexible Metal Conduit (identified on UL Listing Mark as Flexible Steel Conduit or Flexible Steel Conduit Type RW), by AFC Cable Systems Inc., Anamet Electrical Inc., Electri-Flex Co., or International Metal Hose Co.

E. Liquid-tight Flexible Metal Conduit: UL categorized as liquid-tight flexible metal conduit (identified on UL Listing Mark as Liquid-Tight Flexible Metal Conduit, also specifically marked with temperature and environment application data), by AFC Cable Systems Inc., Anamet Electrical Inc., Electri-Flex Co., or Universal Metal Hose Co.

F. Surface Metal Raceway, Fittings and Accessories: By Thomas & Betts Corp., Mono-Systems Inc. or Wiremold Co. Area and conductor capacity indicated for each size raceway is for reference. Follow manufacturer's recommended raceway capacity for all types and sizes of conductors:
   1. Size 1: Nominal area .3 sq. in. min., 4 No. 12 THW max.; Thomas & Betts B400, Mono-Systems SMS 700, or Wiremold's V700.
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2. Size 2: Nominal area .75 sq. in. min., 11 No. 12 THW max.; Thomas & Betts SR250, Mono-Systems SMS2100, Wiremold's 2100.

3. Size 3: Nominal area 2.8 sq. in. min., 43 No. 12 THW max.; Thomas & Betts SR500, Mono-Systems SMS3200, or Wiremold's G3000.

G. Wireways, Fittings and Accessories:


I. Connectors and Couplings:
   1. Locknuts: UL, steel/zinc electroplate; Appleton Electric Co.’s BL-50 Series, Cooper/Crouse-Hinds’ 11 Series, OZ/Gedney Co.’s 1-50S Series, Raco Inc.’s 1002 Series, Steel City/T&B Corp.’s LN-101 Series, or Thomas & Betts Corp.’s 141 Series.
   2. Couplings (For Rigid Metal and IMC Conduit): Standard galvanized threaded couplings as furnished by conduit manufacturer, Allied Tube & Conduit Corp.’s Kwik-Couple, or Thomas & Betts Corp.’s Shamrock.
   3. Three Piece Conduit Coupling (For Rigid Metal and IMC Conduit): Steel, malleable iron, zinc electroplate; Allied Tube & Conduit Corp.’s Kwik-Couple, Appleton Electric Co.’s EC-50 Series, Cooper/Crouse-Hinds’ 190M Series, OZ/Gedney Co.’s 4-50 Series, Raco Inc.’s 1502 Series, Steel City/T & B Corp.’s EK-401 Series, or Thomas & Betts Corp.’s 675 Series.
   4. Electrical Metallic Tubing Couplings and Insulated Connectors: Compression type, steel/zinc electroplate; Appleton Electric Co.’s TW-50CS1, TWC-50CS Series, Cooper/Crouse-Hinds’ 1650, 660S Series, Raco Inc.’s 2912, 2922 Series, Steel City/T & B Corp.’s TC-711 Series, or Thomas & Betts Corp.’s 5120, 5123 Series.
   5. Flexible Metal Conduit Connectors: Arlington Industries Inc.’s Saddle-Grip, OZ/Gedney Co.’s C-8T, 24-34T, ACV-50T Series, or Thomas & Betts Corp.’s Nylon Insulated Tite-Bite Series.
   6. Liquid-tight Flexible Metal Conduit Connectors:
      a. Dry, Damp Locations: Steel, malleable iron, zinc electroplate, insulated throat; Appleton Electric Co.’s STB Series, Cooper/Crouse-Hinds’ LTB Series, OZ/Gedney Co.’s 4Q-50T Series, Raco Inc.’s 3512 Series, Steel City/T & B Corp.’s LT-701 Series, or Thomas & Betts Corp.’s 5332 Series.
      b. Wet Locations: OZ/Gedney Co.’s 4Q-TG Series (hot-dip/mechanically galvanized), or Thomas & Betts Corp.’s 3532 Series (PVC coated).

J. Conduit Bodies (Threaded):
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1. Dry, Damp Locations: Zinc electroplate malleable iron or cast iron alloy bodies with zinc electroplate steel covers; Appleton Electric Co.’s Unilets, Cooper/Crouse-Hinds’ Condulets, OZ/Gedney Co.’s Conduit Bodies, or Thomas & Betts Corp.’s Conduit Bodies.

2. Wet Locations: Malleable iron or cast iron alloy bodies and covers with hot dipped galvanized or other specified corrosion resistant finish; Cooper/Crouse-Hinds’ Condulets (Corro-free epoxy powder coat), Thomas & Betts Corp.’s Conduit Bodies (hot dipped galvanized), or OZ/Gedney Co.’s Conduit Bodies (hot dipped galvanized). Stainless steel cover screws, covers gasketed to suit application.

K. Expansion Fittings:

1. Dry, Damp Locations:
   a. Malleable iron, zinc electroplate finish: Appleton Electric Co.’s XJ or OZ/Gedney Co.’s AX (TX for EMT), with external bonding jumper.
   b. Electrogalvanized Steel: Cooper/Crouse-Hinds’ XJG (XJG-EMT for EMT), or Thomas & Betts Corp.’s XJG, with internal grounding.

2. Wet Locations: Cooper/Crouse-Hinds XJG (Corro-free epoxy powder coat), OZ Gedney Co.’s AX, EXE (end type, hot dipped galvanized), or Thomas & Betts Corp.’s XJG (hot dipped galvanized).

L. Deflection Fittings:

1. Dry, Damp Locations: Appleton Electric Co.’s DF, Cooper/Crouse-Hinds’ XD, or OZ/Gedney Co.’s Type DX.

2. Wet Locations: Ductile iron couplings with hot dipped galvanized finish, neoprene sleeve, and stainless steel bands, Appleton Electric Co.’s CF; or bronze couplings, neoprene sleeve, and stainless steel bands, OZ/Gedney Co.’s Type DX.

M. Sealing Fittings:

1. Dry, Damp Locations: Appleton Electric Co.’s EYS, ESU w/Kwiko sealing compound and fiber filler, Cooper/Crouse-Hinds’ EYS, EZS w/Chico A sealing compound and Chico X filler, OZ/Gedney Co.’s EY, EYA with EYC sealing compound and EYF damming fiber, or Thomas & Betts Corp.’s. EYS w/Chico A sealing compound and Chico X filler.
   a. Other Type Fittings: As required to suit installation requirements, by Appleton Electric Co., Cooper/Crouse-Hinds, OZ/Gedney Co, or Thomas & Betts Corp.

2. Wet Locations: Malleable iron body with hot dipped/mechanically galvanized finish, neoprene sleeve, and stainless steel bands, Appleton electric Co.’s CF; or bronze couplings, neoprene sleeve, and stainless steel bands, OZ/Gedney Co.’s Type DX.
   a. Horizontal: Cooper/Crouse-Hinds’ EYS with Chico A sealing compound and Chico X filler, OZ/Gedney Co.’s EYD with EYC sealing compound and EYF damming fiber, or Thomas & Betts Corp.’s. EYS w/Chico A sealing compound and Chico X filler.
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b. Vertical (with Drain): Cooper/Crouse-Hinds with Chico A sealing compound and Chico X filler, OZ/Gedney Co.’s EY, EYA with EYC sealing compound and EYF damming fiber, or Thomas & Betts Corp.’s w/Chico A sealing compound and Chico X filler.

c. Other Type Fittings. As required to suit installation requirements, by Cooper/Crouse-Hinds, OZ/Gedney Co., or Thomas & Betts Corp. with hot dipped/mechanically galvanized finish or epoxy powder coat.

N. Sealant for Raceways Exposed to Different Temperatures: Sealing compounds and accessories to suit installation; Appleton Electric Co.’s DUC, or Kwiko Sealing Compound with fiber filler, Cooper/Crouse-Hinds’ Chico A Sealing Compound with Chico X fiber, Electrical Products Division 3M Scotch products, OZ Gedney Co.’s DUX or EYC sealing compound with EYF damming fiber, or Thomas & Betts Corp.’s Blackburn DX.

O. Vertical Conductor Supports:
1. Dry, Damp Locations: Kellem/Hubbell Inc.’s Conduit Riser Grips, or OZ/Gedney Co.’s Type M, Type R.
2. Wet Locations: Kellem/Hubbell Inc.’s Conduit Riser Grips (stainless steel or tin coated bronze), or OZ/Gedney Co.’s hot dipped galvanized finish Type CMT or Type W.

2.02 OUTLET, JUNCTION, AND PULL BOXES

A. Galvanized Steel Outlet Boxes: Standard galvanized steel boxes and device covers by Appleton Electric Co., Beck Mfg./Picoma Industries, Cooper/Crouse-Hinds, Raco/Div. of Hubbell, or Steel City/T & B Corp.


C. Threaded Type Boxes:
1. Outlet Boxes:
   a. For Dry, Damp Locations: Zinc electroplate malleable iron or cast iron alloy boxes by Appleton Electric Co., Cooper/Crouse-Hinds Co., OZ/ Gedney Co., or Thomas & Betts Corp. with zinc electroplate steel covers to suit application.
   b. For Wet Locations: Malleable iron or cast iron alloy boxes with hot dipped galvanized or other specified corrosion resistant finish as produced by Cooper/Crouse-Hinds (hot dipped galvanized or Corro-free epoxy powder coat), OZ/Gedney Co. (hot dipped galvanized), or Thomas & Betts Corp. (hot dipped galvanized) with stainless steel cover screws, and malleable iron covers gasketed to suit application.

2. Junction And Pull Boxes:
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For Dry, Damp Locations: Zinc electroplate cast iron boxes by Appleton Electric Co., Cooper/Crouse-Hinds, OZ/Gedney Co., or Thomas & Betts Corp. with zinc electroplate steel or cast iron cover.

For Wet Locations: Cast iron boxes by Cooper/Crouse-Hinds’ (hot dipped galvanized or Corro-free epoxy powder coat), OZ/Gedney Co. (hot dipped galvanized), or Thomas & Betts Corp. (hot dipped galvanized) with stainless steel cover screws and cast iron cover gasketed to suit application.

3. Conduit Bodies, Threaded (Provided with a Volume Marking):
   a. For Dry, Damp Location: Zinc electroplate malleable iron or cast iron alloy bodies with zinc electroplate steel covers; Appleton Electric Co.’s Unilets, Cooper/Crouse-Hinds’ Condulets, OZ/Gedney Co.’s Conduit Bodies, or Thomas & Betts Corp.’s Conduit Bodies.
   b. For Wet Locations: Malleable iron or cast iron alloy bodies with hot dipped galvanized or other specified corrosion resistant finish; Cooper/Crouse-Hinds’ Condulets (hot dipped galvanized or Corro-free epoxy power coat), OZ/Gedney Co.’s Conduit Bodies (hot dipped galvanized), or Thomas & Betts Corp.’s Conduit Bodies (hot dipped galvanized) with stainless steel cover screws and malleable iron covers gasketed to suit application.

D. Specific Purpose Outlet Boxes: As fabricated by equipment manufacturers for mounting their equipment thereon.

E. Outlet Boxes and Related Products for Fire Rated Construction:
   1. Parameters For Use of Listed Metallic Outlet or Switch Boxes: UL Electrical Construction Equipment Directory - Metallic Outlet Boxes (QCIT).

2.03 CONDUCTORS AND ACCESSORIES

A. Date of Manufacture: No insulated conductor more than one year old when delivered to the site will be acceptable.

B. Acceptable Companies: American Insulated Wire Corp., BICC General Cable Industries Inc., Cerro Wire & Cable Co. Inc., Pirelli Cable Corp., Rome Cable Corp., or Southwire Co..

C. Conductors: Annealed uncoated copper or annealed coated copper in conformance with the applicable standards for the type of insulation to be applied on the conductor. Conductor sizes No. 8 and larger shall be stranded.
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D. Types:

1. Electric Light and Power Wiring:
   a. General: Rated 600V, NFPA 70 Type FEP, THHN, THW, THW-2, THWN, THWN-2, XHH, XHHW, XHHW-2.
   b. THWN Gasoline and Oil Resistant: Polyvinylchloride insulation rated 600 V with nylon jacket conforming to UL requirements for type THWN insulation, with the words “GASOLINE AND OIL RESISTANT II” marked thereon.
   c. USE, USE-2: Dual rated heat and moisture resistant insulation rated 600 V with jacket or dual purpose insulation/protective covering conforming to UL requirements for type USE service entrance cables.

2. Class 1 Wiring:
   a. No. 18 and No. 16 AWG: Insulated copper conductors suitable for 600 volts, NFPA 70 types KF-2, KFF-2, PAFF, PF, PFF, PGF, PGFF, PTFF, SF-2, SFF-2, TF, TFF, TFN, TFFN, ZF, or ZFF.
   b. Larger than No. 16 AWG: Insulated copper conductors suitable for 600 volts, in compliance with NFPA 70 Article 310.
   c. Conductor with other types and thickness of insulation may be used if listed for Class 1 circuit use.

3. Class 2 Wiring:
   b. Other types of cables may be used in accordance with NFPA 70 Table 725-61 “Cable Uses and Permitted Substitutions”, as approved.

4. Class 3 Wiring:
   a. Single Conductors No. 18 and No. 16 AWG: Same as Class 1 No. 18 and No. 16 AWG conductors, except that:
      1) Conductors are also listed as CL3.
      2) Voltage rating not marked on cable except where cable has multiple listings and voltage marking is required for one or more of the listings.
   c. Other types of cables may be used in accordance with NFPA 70, Table 725-61 “Cable Uses and Permitted Substitutions”, as approved.

E. Connectors:

1. General: Connectors specified are part of a system. Furnish connectors and components, and use specific tools and methods as recommended by connector manufacturer to form complete connector system.

2. Splices:
   a. Spring Type:
      1) Rated 105° C, 600V; Buchanan/Ideal Industries Inc.’s B-Cap, Electrical Products Div./3M’s Scotchlok Type Y,
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R, G, B, O/B+, R/Y+, or B/G+, or Ideal Industries Inc.’s Wing Nuts or Wire Nuts.

2) Rated 150° C, 600V; Ideal Industries Inc.’s High Temperature Wire-Nut Model 73B, 59B.

b. Indent Type with Insulating Jacket:

1) Rated 105° C, 600V; Buchanan/Ideal Industries Inc.’s Crimp Connectors, Ideal Industries Inc.’s Crimp Connectors, Penn-Union Corp.’s Penn-Crimps, or Thomas & Betts Corp.’s STA-KON.

c. Indent Type (Uninsulated): Anderson/Hubbell’s Versa-Crimp, VERSAtile, Blackburn/T&B Corp.’s Color-Coded Compression Connectors, Electrical Products Div./3M’s Scotchlok 10000, 11000 Series, Framatome Connectors/Burndy’s Hydent, Penn-Union Corp.’s BCU, BBCU Series, or Thomas & Betts Corp.’s Compression Connectors.

d. Connector Blocks: NIS Industries Inc.’s Polaris System, or Thomas & Betts Corp.’s Blackburn AMT Series.

e. Resin Splice Kits: Electrical Products Div./3M’s Scotchcast Brand Kit Nos. 82A Series, 82-B1 or 90-B1, or Scotchcast Brand Resin Pressure Splicing Method.

f. Heat Shrinkable Splices: Electrical Products Div./3M’s ITCSN, Raychem Corp.’s Thermofit Type WCS, or Thomas & Betts Corp.’s SHRINK-KON Insulators.

g. Cold Shrink Splices: Electrical Products Div./3M’s 8420 Series.

2. Gutter Taps: Anderson/Hubbell’s GP/GT with GTC Series Covers, Blackburn/T&B Corp.’s H-Tap Type CF with Type C Covers, Framatome Connectors/Burndy’s Polytap KPU-AC, H-Crimpit Type YH with CF-FR Series Covers, ILSCO’s GTA Series with GTC Series Covers, Ideal Industries Inc.’s Power-Connect GP, GT Series with GIC covers, NSI Industries Inc.’s Polaris System, OZ/Gedney Co.’s PMX or PT with PMXC, PTC Covers, Penn-Union Corp.’s CDT Series, or Thomas & Betts Corp.’s Color-Keyed H Tap CHT with HTC Covers.


4. Lugs:

a. Single Cable (Compression Type Lugs): Copper, one or 2 hole style (to suit conditions), long barrel; Anderson/Hubbell’s VERSAtile VHCL, Blackburn/T&B Corp.’s Color-Coded CTL, LCN, Framatome Connectors/Burndy’s Hylug YA, Electrical Products Div./3M Scotchlok 31036 or 31145 Series, Ideal Industries Inc.’s CCB or CCBL, NSI Industries Inc.’s L, LN Series, Penn-Union Corp.’s BBLU Series, or Thomas & Betts Corp.’s 54930BE or 54850BE Series.

b. Single Cable (Mechanical Type Lugs): Copper, one or 2 hole style (to suit conditions); Blackburn/T&B Corp.’s Color-Keyed Locktite Series, Framatome Connectors/Burndy’s Qiklug Series,
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NSI Industries Inc.’s Type TL, Penn-Union Corp.’s VI-TITE Terminal Lug Series, or Thomas & Betts Corp.’s Locktite Series.

c. Multiple Cable (Mechanical Type Lugs): Copper, configuration to suit conditions; Framatome Connectors/Burnby’s Qiklug Series, NSI Industries Inc.’s Type TL, Penn-Union Corp.’s VI-TITE Terminal Lug Series, or Thomas & Betts Corp.’s Color-Keyed Locktite Series.

F. Tapes:

1. Insulation Tapes:
   a. Plastic Tape: Electrical Products Div./3M’s Scotch Super 33+ or Scotch 88, Plymouth Rubber Co.’s Plymouth/ Bishop Premium 85CW.
   b. Rubber Tape: Electrical Products Div./3M’s Scotch 130C, or Plymouth Rubber Co.’s Plymouth/Bishop W963 Plysafe.

2. Moisture Sealing Tape: Electrical Products Div./3M’s Scotch 2200 or 2210, or Plymouth Rubber Co.’s Plymouth/Bishop 4000 Plyseal-V.

3. Electrical Filler Tape: Electrical Products Div./3M’s Scotchfil, or Plymouth Rubber Co.’s Plymouth/Bishop 125 Electrical Filler Tape.


5. Arc Proofing Tapes:
   a. Arc Proofing Tape: Electrical Products Div./3M’s Scotchtape 77, Mac Products Inc.’s AP Series, or Plymouth Rubber Co.’s Plymouth/Bishop 53 Plyarc.
   b. Glass Cloth Tape: Electrical Products Div./3M’s Scotch 27/Scotch 69, Mac Products Inc.’s TAPGLA 5066, or Plymouth Rubber Co.’s Plyglas.

G. Wire-Pulling Compounds: To suit type of insulation; American Polywater Corp.’s Polywater Series, Electric Products Div./3M’s WL, WLX, or WLV, Greenlee Textron Inc.’s Y-ER-EAS, Cable Cream, Cable Gel, Winter Gel, Ideal Industries Inc.’s Yellow 77, Aqua-Gel II, Aqua-Gel CW, or Thomas & Betts Corp.’s Series 15-230 Cable Pulling Lubricants, or Series 15-631 Wire Slick.

H. Wire Management Products: Cable clamps and clips, cable ties, spiral wraps, etc., by Catamount/T&B Corp., or Ideal Industries Inc.

2.04 WIRING DEVICES

A. Local Switches:


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B. Receptacles:


C. Wall Plates:


2.05 SUPPORTING DEVICES

A. Fasteners: Furnish all fasteners and hardware compatible with the materials and methods required for attachment of supporting devices.

1. Slotted Type Concrete Inserts: Galvanized pressed steel plate complying with ASTM A 283; box-type welded construction with slot designed to receive steel nut and with knockout cover, hot-dipped galvanized in compliance with ASTM A 123.

2. Masonry Anchorage Devices: Expansion shields complying with FS FF-S-325, as follows:
   a. Furnish lead expansion shields for machine screws and bolts 1/4 inch and smaller; head-out embedded nut type, single unit class, Group I, Type I, Class 1.
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b. Furnish lead expansion shields for machine screws and bolts larger than 1/4 inch in size; head-out embedded nut type, multiple unit class, Group I, Type I, Class 2.

c. Furnish bolt anchor expansion shields for lag bolts, zinc alloy, long-shield anchors class, Group II, Type 1, Class 1.

d. Furnish bolt anchor expansion shields for bolts, closed-end bottom bearing class, Group II, Type 2, Class 1.

3. Toggle Bolts: Tumble-wing type, complying with FS FF-B-588C, Type, class and style as required.

4. Nuts, Bolts, Screws, Washers:

a. General: Furnish zinc-coated fasteners, with galvanizing complying with ASTM A 153 for exterior use or where built into exterior walls. Furnish fasteners for the type, grade and class required for the particular installation.

b. Standard Nuts and Bolts: Regular hexagon head type, complying with ASTM A 307, Grade A.

c. Lag Bolts: Square head type, complying with FS FF-B-561C.


e. Wood Screws: Flat head carbon steel, complying with FS FF-S-111.


g. Lock Washers: Helical spring type carbon steel, complying with FS FF-W-84.

B. “C” Beam Clamps:

1. For 1 inch Conduit Maximum: B-Line Systems Inc.’s BG-8-C2, BP-8-C1 Series, or Caddy Fastener Div./Erico Products Inc.’s BC-8P and BC-8PSM Series.

2. For 3 inch Conduit Maximum: Appleton Electric Co.’s BH-500 Series beam clamp with H50WB Series hangers, Kindorf/T&B Corp.’s 500 Series beam clamp with 6HO-B Series hanger, or OZ/Gedney Co.’s IS-500 Series beam clamp with H-OWBS Series hanger.

3. For 4 inch Conduit Maximum: Kindorf/T&B Corp.’s E-231 beam clamp and E-234 anchor clip and C-149 series lay-in hanger, or Unistrut Corp.’s P2676 beam clamp and P-1659A Series anchor clip with J1205 Series lay in hanger.

4. For Threaded Rods (100 lbs. load max.): Caddy Fastener Div./Erico Products Inc.’s BC-4A.

5. For Threaded Rods (200 lbs. load max.): Appleton Electric Co.’s BH-500 Series, Kindorf/T&B Corp.’s 500 Series, or OZ/Gedney Co.’s IS-500 Series.

6. For Threaded Rods (300 lbs. load max.): Kindorf/T&B Corp.’s E-231 beam clamp and E-234 anchor clip, or Unistrut Corp.’s P2676 beam clamp and P-1659A Series anchor clip.
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C. Fastener Fittings for Wood and Existing Masonry: Kindorf/T&B Corp.’s E-243, E-244, E-245, E-170, or Versabar Corp.’s VX-4310, VX-2308, VX-4308, VX-4309.

D. Pipe Straps: Two hole steel conduit straps; Kindorf/T&B Corp.’s C-144 or C-280 Series.

E. Pipe Clamps: One-hole malleable iron type clamps; Kindorf/T&B Corp.’s HS-400 Series, or OZ/Gedney Co.’s 14-50 Series.

F. Channel Support System and Accessories: 12 gage galvanized steel channel and accessories; B-Line System Inc.’s B-22 (1-5/8 x 1-5/8 inches), B-12 (1-5/8 x 2-7/16 inches), B-11 (1-5/8 x 3-1/4 inches), Kindorf/T&B Corp.’s B-900 (1-1/2 x 1-1/2 inches), B-901 (1-1/2 x 1-7/8 inches), B-902 (1-1/2 x 3 inches), Unistrut Corp.’s, P-3000 (1-3/8 x 1-5/8 inches), P-5500 (1-5/8 x 2-7/16 inches), P-5500 (1-5/8 x 3-1/4 inches), or Versabar Corp.’s VA-1 (1-5/8 x 1-5/8 inches), VA-3 (1-5/8 x 2-1/2 inches).

G. Supporting Fasteners (Metal Stud Construction): Metal stud supports, clips and accessories as produced by Caddy/Erico Products Inc.

2.06 SAFETY SWITCHES (SINGLE THROW)

A. NEMA 1, 3R, 4 (Stainless Steel), 12: Cutler-Hammer Inc.’s DH, Federal Pacific Electric Co.’s Class 1240, General Electric Co.’s Type TH, Square D Co.’s Heavy Duty Series, or Westinghouse Electric Corp.’s H-600; having:
   1. Fuses or unfused as indicated on drawings.
   2. Fused switches equipped with fuseholders to accept only the fuses specified (UL Class RK-1, RK-5, or L).
   3. NEMA 1 enclosure unless otherwise indicated on drawing.
   4. 240 V rating for 120 V, 208 V, or 240 V circuits.
   5. 600 V rating for 277 V, or 480 V circuits.
   6. Solid neutral bus when neutral conductor is included with circuit.
   7. Ground bus when equipment grounding conductor is included with circuit.
   8. Current rating and number of poles as indicated on drawings.

B. NEMA 4X: Crouse-Hinds Co.’s NST, Cutler-Hammer Inc.’s DH, General Electric Co.’s Type TH, Square D Co.’s Heavy Duty Series, or Westinghouse Electric Corp.’s H-600; having:
   1. Fuses, or unfused as indicated on drawings.
   2. Fused switches equipped with fuseholders to accept only the fuses specified (UL Class RK-1, RK-5, or L).
   4. 240 V rating for 120 V, 208 V, or 240 V circuits.
   5. 600 V rating for 277 V, or 480 V circuits.
   6. Solid neutral bus when neutral conductor is included with circuit.
   7. Ground bus when equipment grounding conductor is included with circuit.
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8. Current rating and number of poles as indicated on drawings.

C. Fuses for Motor Circuits:
   1. Cartridge Type (250 Volts, 600 Amperes or Less): Dual element time-delay, UL Class RK-5, 200,000 amperes R.M.S. symmetrical interrupting capacity:
      a. Bussmann Mfg. Div./McGraw Edison Co.’s Type FRN-R.
      b. Gould Inc. Circuit Protection Div. (Chase-Shawmut) Type ATR.
      c. Littlefuse Inc.’s Type FLNR.
   2. Cartridge Type (600 Volts, 600 Amperes or Less): Dual element time-delay, UL Class RK-5, 200,000 amperes R.M.S. symmetrical interrupting capacity:
      a. Bussmann Mfg. Div./McGraw Edison Co.’s Type FRS-R.
      b. Gould Inc. Circuit Protection Div. (Chase-Shawmut) Type ATS-TR.
      c. Littlefuse Inc.’s Type FLSR.

D. Fuses for Lighting and Heating Circuits:
   1. Cartridge Type (250 Volts): Single element, UL Class RK-1, 200,000 amperes R.M.S. symmetrical interrupting capacity:
      a. Bussmann Mfg. Div./McGraw Edison Co.’s Type KTN-R.
      b. Gould Inc. Circuit Protection Div. (Chase-Shawmut) Type A2KR.
      c. Littlefuse Inc.’s Type KLN.
   2. Cartridge Type (600 Volts): Single element, UL Class RK-1, 200,000 amperes R.M.S. symmetrical interrupting capacity:
      a. Bussmann Mfg. Div./McGraw Edison Co.’s Type KTS-R.
      b. Gould Inc. Circuit Protection Div. (Chase-Shawmut) Type A6KR.
      c. Littlefuse Inc.’s Type KLSR.

2.07 GROUNDING AND BONDING

A. Ground Clamps (Cable to Pipe): Blackburn/T&B Corp.’s GUV, Framatome Connectors/Burndy Corp.’s GAR, GD, GP, GK, or OZ/Gedney Co.’s ABG, CG.

B. Ground Clamps (Cable to Rod): Blackburn/T&B Corp.’s GG, GGH, JAB, JABH, GUV, Dossert Corp.’s GN, GPC, Framatome Connectors/Burndy Corp.’s GP, GX, GRC, or OZ/Gedney Co.’s ABG.

C. Ground Lugs: Copper, one or 2 hole style (to suit conditions), long barrel; Anderson/Hubbell’s VERSAtile VHCL, Blackburn/T&B Corp.’s Color-Coded CTL, LCN, Framatome Connectors/Burndy’s Hylug YA, Electrical Products Div./3M Scotchlok 31036 or 31145 Series, Ideal Industries Inc.’s CCB or CCBL, or Thomas & Betts Corp.’s 54930BE or 54850BE Series.

D. Exothermic Type Weld: Erico Inc.’s Cadweld Process, or Furseweld/T&B Corp.’s Exothermic Welding System.
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E. Compression Connectors: Amp Inc.’s Ampact Copper Grounding System, or Burndy Corp.’s Hyground System.

F. Rod Electrodes: Copper clad (minimum .010 jacket) ground rods minimum 5/8 inches diameter by 8’-0” long.

G. Plate Electrodes: Copper plates minimum 0.06 inches thick by 2’-0” square feet of surface area.

H. Grounding Electrode Conductors and Bonding Conductors: Copper conductors, bare or insulated with THW, THW-2, XHHW, XHHW-2, THWN, THWN-2 or THHN insulation.

I. Hardware: Silicon-bronze bolts, nuts, flat and lock washers etc. by Dossert Corp., Framatome Connectors/Burndy Corp., or OZ/Gedney Co.

2.08 NAMEPLATES AND TAGS

A. General: Precision engraved letters and numbers with uniform margins, character size minimum 3/16 inch high.
   1. Phenolic: Two color laminated engraver's stock, 1/16 inch minimum thickness, machine engraved to expose inner core color (white).
   2. Aluminum: Standard aluminum alloy plate stock, minimum .032 inches thick, engraved areas enamel filled or background enameled with natural aluminum engraved characters.
   3. Materials for Outdoor Applications: As recommended by nameplate manufacturer to suit environmental conditions.

PART 3 EXECUTION

3.01 RACEWAY INSTALLATION

A. Number of Raceways: Do not change number of raceways to less than the number indicated on the drawings.
   1. Each raceway shall enclose one circuit unless otherwise indicated on the drawings.

B. Not Used

C. Conduit Installed Concealed:
   1. Install conduit concealed unless otherwise indicated on the drawings.
   2. Existing Construction:
      a. Run conduit in existing chases and hung ceilings.
      b. If conduit cannot be installed concealed due to conditions encountered in the building, report such conditions and await approval in writing before proceeding.
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3. New Construction:
   a. Run conduit in the ceilings, walls, and partitions.
   b. Conduit may not be installed in concrete floor slab (concrete slabs that are both ceilings and floors shall be treated as floor slabs).

2) Conduit Under Slab on Grade:
   a) Run conduit under vapor barrier (if any).
   b) Install equipment grounding conductor in each conduit. Bond at boxes and equipment to which conduit is connected.

3) Conduit Under Slab, Above Finished Ceiling:
   a) Attach conduit to bottom of slab or structure supporting the slab.
   b) Firestop through-penetrations of the slab.

4. If any portions of the conduit system cannot be installed concealed due to conditions encountered in the building, report such conditions and await approval in writing before proceeding.

D. Conduits Penetrating Concrete Floor Slabs (Concrete slabs that are both ceilings and floors shall be treated as floor slabs):
   1. Provide a minimum of 2 inches between conduits that vertically penetrate elevated concrete slabs.
   2. Provide firestopping and spray on fireproofing at locations where conduits penetrate surface of floor slab and slab is part of fire rating required for construction.

E. Conduit Installed Exposed:
   1. Install conduit exposed where indicated on the drawings. If not indicated, conduit may be installed exposed, as approved, in:
      a. Unfinished spaces, and finished spaces housing mechanical or electrical equipment that is generally accessible only to facility maintenance personnel.
      b. Areas where existing conduits have been installed exposed.
      c. Areas where conduit cannot be installed concealed.
   2. Install conduit tight to the surface of the building construction.
      Exception:
      a. Where otherwise indicated or directed.
   3. Install vertical runs perpendicular to the floor.
   4. Install runs on the ceiling perpendicular or parallel to the walls.
   5. Install horizontal runs parallel to the floor.
   6. Do not run conduits near heating pipes.
   7. Installation of conduit directly on the floor will not be permitted.

F. Conduit Size: Not smaller than 1/2 inch electrical trade size. Where type FEP, THHN, THWN, THWN-2, XHH, XHHW, or XHHW-2 conductors are specified for use, the minimum allowable conduit size for new Work shall be based on Type THW conductors.
G. Raceways Exposed to Different Temperatures: Where portions of an interior raceway system are exposed to widely different temperatures, seal interior and exterior of raceway to prevent circulation of air from a warmer to a colder section through the raceway installation.
   1. Refrigerated Rooms: Install conduit body or junction box in the raceway system on warm side of refrigerated room. After conductors are installed, seal interior of the raceway at the conduit body or junction box.
   2. Heated Areas to Unheated Areas: After conductors are installed, seal interior of the raceway at the nearest conduit body, outlet or junction box in the heated area adjoining the unheated area.

H. Not Used

K. Raceway Schedule:
   1. Rigid Ferrous Metal Conduit: Install in all locations unless otherwise specified or indicated on the drawings.
   2. Intermediate Ferrous Metal Conduit: May be installed in all dry and damp locations except:
      a. Hazardous areas.
      b. Where other type raceways are specified or indicated on the drawings.
   3. Electrical Metallic Tubing:
      a. May be installed concealed as branch circuit conduits above suspended ceilings where conduit does not support fixtures or other equipment.
      b. May be installed concealed as branch circuit conduits in hollow areas in dry locations, including:
         1) Hollow concrete masonry units, except where cores are to be filled.
         2) Drywall construction with sheet metal studs, except where studs are less than 3-1/2 inches deep.
      c. May be installed exposed as branch circuit conduits in dry non-hazardous locations at elevations over 10'-0" above finished floor where conduit does not support fixtures or other equipment.
   4. Flexible Metal Conduit: Install equipment grounding conductor in the flexible metal conduit and bond at each box or equipment to which conduit is connected:
      a. Use for final conduit connection to recessed lighting fixtures in suspended ceilings. Use 4 to 6 feet of flexible metal conduit (minimum size 1/2 inch) between junction box and fixture. Locate junction box at least 1 foot from fixture and accessible if the fixture is removed.
      b. Use 1 to 3 feet of flexible metal conduit for final conduit connection to:
         1) Emergency lighting units.
         2) Dry type transformers.
         3) Motors with open, drip-proof or splash-proof housings.
         4) Equipment subject to vibration (dry locations).
         5) Equipment requiring flexible connection for adjustment or alignment (dry locations).
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c. Use for concealed branch circuit conduits above existing non-removable suspended ceilings where rigid type raceways cannot be installed due to inaccessibility of space above ceiling.
d. May be installed concealed as branch circuit conduits in drywall construction with sheet metal studs, except where studs are less than 3-1/2 inches deep.

5. Liquid-tight Flexible Metal Conduit: Install equipment grounding conductor in liquid-tight flexible metal conduit and bond at each box or equipment to which conduit is connected:
   a. Use 1 to 3 feet of liquid-tight flexible metal conduit (UL listed and marked suitable for the installation's temperature and environmental conditions) for final conduit connection to:
      1) Motors with weather-protected or totally enclosed housings.
      2) Equipment subject to vibration (damp and wet locations).
      3) Equipment requiring flexible connection for adjustment or alignment (damp and wet locations).

6. Surface Metal Raceway: Use as exposed raceway system in finished spaces at locations indicated on the drawings.
   a. Use surface metal raceway system of size required for number of wires to be installed therein. (Use specific size when indicated on the drawings).
   b. Do not run raceway through walls that have a plaster finish nor through masonry walls or floors. Install a pipe sleeve, or a short length of conduit with junction boxes or adapter fittings for raceway runs through such areas. Run raceway along top of baseboards, care being taken to avoid telephone and other signal wiring. Where raceway crosses chair railing or picture molding, cut the chair railing or picture molding to permit the raceway to lie flat against the wall. Run raceway around door frames and other openings. Run raceway on ceiling or walls perpendicular to or parallel with walls and floors.

L. Fittings and Accessories Schedule:
   1. General:
      a. Use fittings and accessories that have a temperature rating equal to, or higher than the temperature rating of the conductors to be installed within the raceway.
      b. Use zinc electroplate or hot dipped galvanized steel/malleable iron or cast iron alloy fittings and accessories in conjunction with ferrous raceways in dry and damp locations, unless otherwise specified or indicated on the drawings.
      c. Use malleable iron or cast iron alloy fittings and accessories having hot dipped/mechanically galvanized finish or other specified corrosion resistant finish in conjunction with ferrous raceways in wet locations, unless otherwise specified or indicated on the drawings.
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d. Use insulated grounding bushings or grounding wedges on ends of conduit for terminating and bonding equipment grounding conductors (when required) if cabinet or boxes are not equipped with grounding/bonding screws or lugs.

e. Use caps or plugs to seal ends of conduits until wiring is installed (to exclude foreign material).

f. Use insulated grounding bushings on the ends of conduits that are not directly connected to the enclosure (such as stub-ups under equipment, etc.), and bond between bushings and enclosure with equipment grounding conductor.

g. Use expansion fittings where raceways cross expansion joints.

h. Use deflection fittings where raceways cross expansion joints that move in more than one plane.

i. Use 2 locknuts and an insulated bushing on end of each conduit entering sheet metal cabinet or box in dry or damp locations.
   1) Plastic bushing may be used in lieu of insulated bushing on 1/2 and 3/4 inch conduit.
   2) Terminate conduit ends within cabinet/box at the same level.

2. For Rigid and Intermediate Metal Conduit: Use threaded fittings and accessories. Use 3 piece conduit coupling where neither piece of conduit can be rotated.

3. For Electrical Metallic Tubing: Use compression type connectors and couplings.

4. For Flexible Metal Conduit: Use flexible metal conduit connectors.

5. For Liquid-tight Flexible Metal Conduit: Use liquid-tight connectors.

6. For Surface Metal Raceway: Use raceway manufacturer's standard fittings and accessories.

7. For Wireways: Use wireway manufacturer's standard fittings and accessories.

3.02 OUTLET, JUNCTION AND PULLBOX INSTALLATION

A. Mounting Position of Wall Outlets For Wiring Devices: Unless otherwise indicated, install boxes so that the long axis of each wiring device will be vertical.

B. Height of Wall Outlets: Unless otherwise indicated, locate outlet boxes with their center lines at the following elevations above finished floor:

C. Supplementary Junction and Pull Boxes: In addition to junction and pull boxes indicated on the drawings and required by NFPA 70, provide supplementary junction and pull boxes as follows:
   1. When required to facilitate installation of wiring.
   2. At every third 90 degree turn in conjunction with raceway sizes over 1 inch.
   3. At intervals not exceeding 100 feet in conjunction with raceway sizes over 1 inch.
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D. Not Used.

E. Box Schedule for Exposed Conduit System:

1. Dry and Damp Locations: Use zinc electroplate or hot dipped galvanized threaded type malleable iron or cast iron alloy outlet, junction, and pullboxes or conduit bodies provided with a volume marking in conjunction with ferrous raceways unless otherwise specified or indicated on the drawings.
   a. Galvanized steel boxes may be used in conjunction with conduit sizes over 1 inch in non-hazardous dry and damp locations.
   b. Galvanized steel boxes may be used in conjunction with electrical metallic tubing where it is allowed (specified) to be installed exposed as branch circuit conduits at elevations over 10'-0" above finished floor.

2. Wet Locations: Use threaded type malleable iron or cast iron alloy outlet junction, and pullboxes or conduit bodies (provided with a volume marking) with hot dipped galvanized or other specified corrosion resistant coating in conjunction with ferrous raceways unless otherwise specified or indicated on the drawings.
   a. Use corrosion resistant boxes in conjunction with plastic coated rigid ferrous metal conduit.

3. Finishing Collar or Combination Finishing Collar/Outlet Box (Surface Mounted Equipment Used With Exposed Raceway):
   a. Use finishing collar where surface mounted equipment is installed on an exposed raceway outlet box and the equipment base is larger than the outlet box.
   b. Use combination finishing collar/outlet box where surface mounted equipment is not indicated to be installed on an exposed raceway outlet box, but raceway cannot be run directly into equipment body due to equipment design.

F. Specific Purpose Outlet Boxes: Use to mount equipment when available and suitable for job conditions. Unless otherwise specified, use threaded type boxes with finish as specified for exposed conduit system, steel (painted) for surface metal raceway system and galvanized steel for recessed installations.

3.03 CONDUCTOR INSTALLATION

A. Install conductors in raceways after the raceway system is completed.

B. Do not change, group or combine circuits other than as indicated on the drawings.

C. Do not change, group or combine circuits other than as indicated on the drawings except as permitted when reusing existing raceways.

D. Common Neutral Conductor:
   1. A common neutral may be used for 2 or 3 branch circuits where the circuits are indicated on the drawings to be enclosed within the same...
raceway, provided each branch circuit is connected to a different phase in
the panelboard.

2. Exceptions: The following circuits shall have a separate neutral:
a. Circuits containing ground fault circuit interrupter devices.
b. Circuits containing solid state dimmers.
c. Circuits recommended by equipment manufacturers to have
separate neutrals.

E. Conductor Size: Install conductors of size shown on drawings. Where size is not
indicated, the minimum size allowed is:
1. For Electric Light and Power Branch Circuits: No. 12 AWG.
2. For Class 1 Circuits:
   a. No. 18 and No. 16 AWG may be used provided they supply
      loads that do not exceed 6 amps (No. 18 AWG), or 8 amps (No.
      16 AWG).
   b. Larger than No. 16 AWG: Use to supply loads not greater than
      the amperages given in NFPA 70 Section 310-15.
3. For Class 2 Circuits: Any size to suit application.
4. For Class 3 Circuits: No. 18 AWG.

F. Color Coding:
1. Color Coding for 120/208 Volt Electric Light and Power Wiring:
   a. Color Code:
      1) 2 wire circuit - black, white.
      2) 3 wire circuit - black, red, white.
      3) 4 wire circuit - black, red, blue, white.
   b. White to be used only for an insulated grounded conductor
      (neutral). If neutral is not required use black and red, or black,
      red and blue for phase to phase circuits.
      1) “White” for Sizes No. 6 AWG or Smaller:
         a) Continuous white outer finish, or:
         b) Three continuous white stripes on other than
            green insulation along its continuous length.
      2) “White” for Sizes Larger Than No. 6 AWG:
         a) Continuous white outer finish, or:
         b) Three continuous white stripes on other than
            green insulation along its continuous length, or:
         c) Distinctive white markings (color coding tape)
            encircling the conductor, installed on the
            conductor at time of its installation. Install
            white color coding tape at terminations, and at 1
            0” intervals in gutters, pullboxes, and manholes.
   c. Colors (Black, Red, Blue):
      1) For Branch Circuits: Continuous color outer finish.
      2) For Feeders:
         a) Continuous color outer finish, or:
         b) Color coding tapes encircling the conductors,
            installed on the conductors at time of their
            installation. Install color coding tapes at
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terminations, and at 1” 0” intervals in gutter, pullboxes, and manholes.

2. H Use wire management products to bundle, route, and support wiring in junction boxes, pullboxes, wireways, gutters, channels, and other locations where wiring is accessible.

I. Equipment Grounding Conductor:
1. Install equipment grounding conductor:
   a. Where specified in other Sections or indicated on the drawings.
   b. In conjunction with circuits recommended by equipment manufacturers to have equipment grounding conductor.
2. Equipment grounding conductor is not intended as a current carrying conductor under normal operating circumstances.
3. Color Coding For Equipment Grounding Conductor:
   b. “Green” For sizes No. 6 AWG or Smaller:
      1) Continuous green outer finish, or:
      2) Continuous green outer finish with one or more yellow stripes, or:
      3) Bare copper (see exception below).
   c. “Green” For Sizes Larger Than No. 6:
      1) Stripping the insulation or covering from the entire exposed length (see exception below).
      2) Marking the exposed insulation or covering with green color coding tapes.
      3) Identify at each end and at every point where the equipment grounding conductor is accessible.
   d. Exception For use of Bare Copper: Not allowed for use where NFPA 70 specifically requires equipment grounding conductor to be insulated, or where specified in other Sections or indicated on the drawings to be insulated.

J. Arc Proofing: Arc proof feeders installed in a common pullbox or manhole as follows:
1. Arc proof new feeders.
2. Arc proof existing feeders that are spliced to new feeders.
3. Arc proof each feeder as a unit (except feeders consisting of multiple sets of conductors).
4. Arc proof feeders consisting of multiple sets of conductors by arc proofing each set of conductors as a unit.
5. Arc proof feeders with half-lapped layer of 55 mils thick arc proofing tape, random wrapped or laced with glass cloth tape or glass-fiber cord. For arc proofing tape less than 55 mils thick add layers to equivalent of 55 mils thick arc proofing tape.

K. Conductor Schedule - Types and Use:
1. Electric Light and Power Circuits:
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1. FEP, THHN, THW, THW-2, THWN, THWN-2, XHH, XHHW, or XHHW-2: Wiring in dry or damp locations (except where special type insulation is required).
2. THWN, THWN-2, XHHW, XHHW-2, USE, or USE-2: Wiring in wet locations (except where type USE or USE-2 insulated conductors are specifically required, or special type insulation is required).
3. THHN, THWN or THWN-2: Wiring installed in existing raceway systems (except where special type insulation is required).
4. THHN, THW-2, THWN, XHHW, or XHHW-2: Wiring for electric discharge lighting circuits (fluorescent, HID), except where fixture listing requires wiring rated higher than 90° C.
5. THWN Marked “Gasoline and Oil Resistant”: Wiring to gasoline and fuel oil pumps.
6. USE, or USE-2: Wiring indicated on the drawings to be direct burial in earth.
7. USE, or USE-2 Marked “Sunlight Resistant”:
   1) Service entrance wiring from overhead service to the service equipment.
   2) Wiring exposed to the weather and unprotected (except where special type insulation is required).

2. Class 1 Circuits: Use Class 1 wiring specified in Part 2 (except where special type insulation is required).
3. Class 2 Circuits: Use Class 2 wiring specified in Part 2 (except where special type insulation is required).
4. Class 3 Circuits: Use Class 3 wiring specified in Part 2 (except where special type insulation is required).

L. Connector Schedule - Types And Use:
1. Temperature Rating: Use connectors that have a temperature rating, equal to, or greater than the temperature rating of the conductors to which they are connected
2. Splices:
   a. Dry Locations:
      1) For Conductors No. 8 AWG or Smaller: Use spring type pressure connectors, indent type pressure connectors with insulating jackets, or connector blocks (except where special type splices are required).
      2) For Conductors No. 6 AWG or Larger: Use connector blocks or uninsulated indent type pressure connectors. Fill indentions in uninsulated connectors with electrical filler tape and apply insulation tape to insulation equivalent of the conductor, or insulate with heat shrinkable splices or cold shrink splices.
      3) Gutter Taps in Panelboards: For uninsulated type gutter taps fill indentions with electrical filler tape and apply insulation tape to insulation equivalent of the conductor, or insulate with gutter tap cover.
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b. **Damp Locations:** As specified for dry locations, except apply moisture sealing tape over the entire insulated connection (moisture sealing tape not required if heat shrinkable splices or cold shrink splices are used).

c. **Wet Locations:** Use uninsulated indent type pressure connectors and insulate with resin splice kits, cold shrink splices or heat shrinkable splices. Exception: Splices above ground which are totally enclosed and protected in NEMA 3R, 4, 4X enclosures may be spliced as specified for damp locations.

3. **Terminations:**
   a. For Conductors No. 10 AWG or Smaller: Use terminals for:
      1) Connecting wiring to equipment designed for use with terminals.
   b. For Conductors No. 8 AWG or Larger: Use compression or mechanical type lugs for:
      1) Connecting cables to flat bus bars.
      2) Connecting cables to equipment designed for use with lugs.
   c. For Conductor Sizes Larger Than Terminal Capacity On Equipment: Reduce the larger conductor to the maximum conductor size that terminal can accommodate (reduced section not longer than one foot). Use compression or mechanical type connectors suitable for reducing connection.

### 3.04 WIRING DEVICE INSTALLATION

**A. Local Switches:** Not Used

**B. Receptacles:** Not Used

**C. Wall Plates:** Not Used

**D. Weatherproof Covers:** Install weatherproof covers on wiring devices in damp and wet locations.

**E. Nameplates:** Install phenolic or embossed aluminum nameplates. Attach nameplate with rivets or vandal resistant fasteners to wall plate. Wall plates may be engraved with required data in lieu of separate nameplates.

### 3.05 SUPPORTING DEVICE INSTALLATION

**A. Attachment of Conduit System:**

1. **Wood Construction:** Attach conduit to wood construction by means of pipe straps with wood screws or lag bolts.
2. **Masonry Construction:** Attach conduit to masonry construction by means of pipe straps and masonry anchorage devices.
3. **Steel Beams:** Attach conduit to steel beams by means of “C” beam clamps and hangers.
4. **Multiple Parallel Conduit Runs:** Use channel support system.
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5. Conduit Above Suspended Ceiling: Do not rest conduit directly on runner bars, T-bars, etc. Support conduit from ceiling supports or from construction above suspended ceiling.

B. Metal Stud Construction: Attach raceways and boxes to metal studs by means of supporting fasteners manufactured specifically for the purpose.
   1. Support and attach outlet boxes so that they cannot torque/twist. Either:
      a. Use bar hanger assembly, or;
      b. In addition to attachment to the stud, also provide far side box support.

C. Not Used:

3.06 SAFETY SWITCH INSTALLATION

A. Install switches so that the maximum height above the floor to the center of the operating handle does not exceed 6'-6".

B. Identify each safety switch, indicating purpose or load served:
   1. NEMA 1 Enclosures: Rivet or bolt nameplate to the cover.
   2. NEMA 12 Enclosures: Rivet or bolt and gasket nameplate to the cover.
   3. NEMA 3R, 4, 4X Enclosures: Attach nameplate to the cover using adhesive specifically designed for the purpose, or mount nameplate on wall or other conspicuous location adjacent to switch. Do not penetrate enclosure with fasteners.

C. Paint switches used for the fire protective signaling system with red paint and identify - “FIRE ALARM CIRCUIT CONTROL”.

D. Paint switches used for oil burner emergency switch with red paint and identify “OIL BURNER”.

3.07 GROUNDING AND BONDING

A. Connections:
   1. Make grounding and bonding connections, except buried connections, with silicone-bronze hardware and ground clamps, ground lugs or compression connectors, to suit job conditions.
   2. For buried connections use exothermic type weld or compression connectors.

END OF SECTION
SECTION 260519

WIRING, GENERAL - 600 VOLTS AND UNDER

PART 1 GENERAL

1.01 SUBMITTALS

A. Waiver of Submittals: The “Waiver of Certain Submittal Requirements” in Section 013300 does not apply to Shop Drawings.

B. Shop Drawings:
   1. For Electrical Circuit Protective Systems: Show proposed routes and installation details (include UL classification data, listing, and system number).

C. Product Data: Catalog sheets, specifications and installation instructions.

1.02 PRODUCT DELIVERY

A. Mark and tag insulated conductors and cables for delivery to the site. Include:
   1. Contractor's name.
   2. Project title and number.
   3. Date of manufacture (month & year).
   4. Manufacturer's name.
   5. Data which explains the meaning of coded identification (UL assigned electrical reference numbers, UL assigned combination of color marker threads, etc.).
   6. Environmental suitability information (listed or marked “sunlight resistant” where exposed to direct rays of sun; wet locations listed/marked for use in wet locations; other applications listed/marked suitable for the applications).

PART 2 PRODUCTS

2.01 INSULATED CONDUCTORS AND CABLES

A. Date of Manufacture: No insulated conductor more than one year old when delivered to the site will be acceptable.

B. Acceptable Companies: General Cable Corporation, Cerro Wire & Cable Co. Inc., Prysmian Cables & Systems, or Southwire Co.

C. Conductors: Annealed uncoated copper or annealed coated copper in conformance with the applicable standards for the type of insulation to be applied on the conductor. Conductor sizes No. 8 and larger shall be stranded.
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D. Types:

1. Electric Light and Power Wiring:

a. General: Rated 600V, NFPA 70 Type THHN/THWN-2 or XHHW-2.

b. THHN/THWN-2 Gasoline and Oil Resistant: Polyvinylchloride insulation rated 600 V with nylon jacket conforming to UL requirements for type THHN/THWN-2 insulation, with the words “GASOLINE AND OIL RESISTANT II” marked thereon.

c. USE-2: Dual rated heat and moisture resistant insulation rated 600 V with jacket or dual purpose insulation/protective covering conforming to UL requirements for type USE-2 service entrance cables.

d. Metal-Clad Cable, NFPA 70 Article 330 Type MC:

   1) Interlocked flexible galvanized steel armor sheath, conforming to UL requirements for type MC metal clad cable.

   2) Insulated copper conductors, suitable for 600 volts, rated 90°C, one of the types listed in NFPA 70 Table 310.13(A) or of a type identified for use in Type MC cable.

   3) Internal full size copper ground conductor with green insulation.

   4) Acceptable Companies: AFC Cable Systems Inc., Southwire, General Cable.

   5) Connectors for MC cable: AFC Fitting Inc.’s AFC Series, Arlington Industries Inc.’s Saddle grip, or Thomas & Betts Co.’s Tite-Bite with anti-short bushings.

MI CABLE IS AVAILABLE IN SEVERAL CONFIGURATIONS AND MATERIALS. CONSULT MANUFACTURER’S CATALOGS.

e. MI: AFC Cable Systems’ Type MI Cable, or Pentair Pyrotenax Mineral Insulated System 1850 Pyrotenax Cable:

   1) Copper conductors.

SYSTEM 1850 COPPER IS RATED TO 1850 DEGREES F AND IS SUITABLE FOR GENERAL USE. STAINLESS STEEL SYSTEMS ARE AVAILABLE, RATED 2000 AND 2200 DEGREES F, AND ARE SUITED TO SOME APPLICATIONS WHERE CORROSION OR CHEMICALS MAY BE DELETERIOUS TO COPPER SHEATH.

   2) Seamless copper sheath.

   3) Two hour fire resistive rating UL system classified, listed in UL Building Materials Directory product category Electrical circuit Protective Systems (FHIT), or Fire Resistant Cables (FHJR).

INCLUDE SUBPARAGRAPH BELOW FOR AREAS WHERE INCREASED CORROSION PROTECTION IS REQUIRED. INDICATE ON THE DRAWINGS WHERE JACKETED
CABLE IS REQUIRED.

4) PVC or HDPE jacketing (where shown on drawings).
5) 600 volt rating.
6) Fittings and accessories as required for a complete system to suit listing and installation conditions.

2. Class 1 Wiring:
   a. No. 18 and No. 16 AWG: Insulated copper conductors suitable for 600 volts, NFPA 70 types KF-2, KFF-2, PAFF, PF, PFF, PGF, PGFF, PTFF, SF-2, SFF-2, TF, TFF, TFFN, ZF, or ZFF.
   b. Larger than No. 16 AWG: Insulated copper conductors suitable for 600 volts, in compliance with NFPA 70 Article 310.
   c. Conductor with other types and thickness of insulation may be used if listed for Class 1 circuit use.

3. Class 2 Wiring:
   b. Other types of cables may be used in accordance with NFPA 70 Table 725.154(G) “Cable Substitutions”, as approved.

4. Class 3 Wiring:
   a. Single Conductors No. 18 and No. 16 AWG: Same as Class 1 No. 18 and No. 16 AWG conductors except that:
      1) Conductor are also listed as CL3.
      2) Voltage rating not marked on cable except where cable has multiple listings and voltage marking is required for one or more of the listings.
   c. Other types of cables may be used in accordance with NFPA 70, Table 725.154(G) “Cable Substitutions”, as approved.

2.02 ELECTRICAL CIRCUIT PROTECTIVE SYSTEM


2.03 CONNECTORS

A. General:
   1. Connectors specified are part of a system. Furnish connectors and components, and use specific tools and methods as recommended by connector manufacturer to form complete connector system.
   2. Connectors shall be UL 486 A listed, or UL 486 B listed for combination dual rated copper/aluminum connectors (marked AL7CU for 75 degrees C rated circuits and AL9CU for 90 degrees C rated circuits).
B. Splices:
1. Spring Type:
   a. Rated 105° C, 600V; Buchanan/Ideal Industries Inc.’s B-Cap, Electrical Products Div./3M’s Scotchlok Type Y, R, G, B, O/B+, R/Y+, or B/G+, or Ideal Industries Inc.’s Wing Nuts or Wire Nuts.
   b. Rated 150° C, 600V; Ideal Industries Inc.’s High Temperature Wire-Nut Model 73B, 59B.
2. Indent Type with Insulating Jacket:
   a. Rated 105° C, 600V; Buchanan/Ideal Industries Inc.’s Crimp Connectors, Ideal Industries Inc.’s Crimp Connectors, Penn-Union Corp.’s Penn-Crimps, or Thomas & Betts Corp.’s STA-KON.
3. Indent Type (Uninsulated): Anderson/Hubbell’s Versa-Crimp, VERSAtile, Blackburn/T&B Corp.’s Color-Coded Compression Connectors, Electrical Products Div./3M’s Scotchlok 10000, 11000 Series, Burndy’s Hydent, Penn-Union Corp.’s BCU, BBCU Series, or Thomas & Betts Corp.’s Compression Connectors.
5. Resin Splice Kits: Electrical Products Div./3M’s Scotchcast Brand Kit Nos. 82A Series, 82-B1 or 90-B1, or Scotchcast Brand Resin Pressure Splicing Method.
6. Heat Shrinkable Splices: Electrical Products Div./3M’s ITCSN, Raychem Corp.’s ThermoFit Type WCS, or Thomas & Betts Corp.’s SHRINK-KON Insulators.

C. Gutter Taps: Anderson/Hubbell’s GP/GT with GTC Series Covers, Blackburn/T&B Corp.’s H- Tap Type CF with Type C Covers, Burndy’s Polytap KPU-AC, H-Crimpit Type YH with CF-FR Series Covers, ILSCO’s GTA Series with GTC Series Covers, Ideal Industries Inc.’s Power-Connect GP, GT Series with GIC covers, NSI Industries Inc.’s Polaris System, OZ/Gedney Co.’s PMX or PT with PMXC, PTC Covers, Penn-Union Corp.’s CDT Series, or Thomas & Betts Corp.’s Color-Keyed H Tap CHT with HTC Covers.


E. Lugs:
1. Single Cable (Compression Type Lugs): Copper, one or 2 hole style (to suit conditions), long barrel; Anderson/Hubbell’s VERSAtile VHCL, Blackburn/T&B Corp.’s Color-Coded CTL, LCN, Burndy’s Hylug YA, Electrical Products Div./3M Scotchlok 31036 or 31145 Series, Ideal Industries Inc.’s CCB or CCBL, NSI Industries Inc.’s L, LN Series, Penn-Union Corp.’s BBLU Series, or Thomas & Betts Corp.’s 54930BE or 54850BE Series.
2. Single Cable (Mechanical Type Lugs): Copper, one or 2 hole style (to suit conditions); Blackburn/T&B Corp.’s Color-Keyed Locktite Series, Burndy's Qiklug Series, NSI Industries Inc.’s Type TL, Penn-Union Corp.’s VI-TITE Terminal Lug Series, or Thomas & Betts Corp.’s Locktite Series.

3. Multiple Cable (Mechanical Type Lugs): Copper, configuration to suit conditions; Bumdy's Qiklug Series, NSI Industries Inc.’s Type TL, Penn-Union Corp.’s VI-TITE Terminal Lug Series, or Thomas & Betts Corp.’s Color-Keyed Locktite Series.

2.04 TAPES

A. Insulation Tapes:  
1. Plastic Tape: Electrical Products Div./3M’s Scotch Super 33+ or Scotch 88, Plymouth Rubber Co.’s Plymouth/ Bishop Premium 85CW.
2. Rubber Tape: Electrical Products Div./3M’s Scotch 130C, or Plymouth Rubber Co.’s Plymouth/Bishop W963 Plysafe.

B. Moisture Sealing Tape: Electrical Products Div./3M’s Scotch 2200 or 2210, or Plymouth Rubber Co.’s Plymouth/Bishop 4000 Plyseal-V.

C. Electrical Filler Tape: Electrical Products Div./3M’s Scotchfil, or Plymouth Rubber Co.’s Plymouth/Bishop 125 Electrical Filler Tape.

D. Color Coding Tape: Electrical Products Div./3M’s Scotch 35, or Plymouth Rubber Co.’s Plymouth/Bishop Premium 37 Color Coding.

E. Arc Proofing Tapes:  
1. Arc Proofing Tape: Electrical Products Div./3M’s Scotch 77, Mac Products Inc.’s AP Series, or Plymouth Rubber Co.’s Plymouth/Bishop 53 Plyarc.
2. Glass Cloth Tape: Electrical Products Div./3M’s Scotch 27/Scotch 69, Mac Products Inc.’s TAPGLA 5066, or Plymouth Rubber Co.’s Plymouth/Bishop 77 Pyglas.

2.05 WIRE-PULLING COMPOUNDS

A. To suit type of insulation; American Polywater Corp.’s Polywater Series, Electric Products Div./3M’s WL, WLX, or WLW, Greenlee Textron Inc.’s, Cable Cream, Cable Gel, Winter Gel, Ideal Industries Inc.’s Yellow 77, Aqua-Gel II, Aqua-Gel CW, or Thomas & Betts Corp.’s Series 15-230 Cable Pulling Lubricants, or Series 15-631 Wire Slick.

2.06 TAGS
A. Precision engrave letters and numbers with uniform margins, character size minimum 3/16 inches high.
   1. Phenolic: Two color laminated engraver's stock, 1/16 inch minimum thickness, machine engraved to expose inner core color (white).
   2. Aluminum: Standard aluminum alloy plate stock, minimum .032 inches thick, engraved areas enamel filled or background enameled with natural aluminum engraved characters.

2.07 WIRE MANAGEMENT PRODUCTS

A. Cable Clamps and Clips, Cable Ties, Spiral Wraps, etc: Catamount/T&B Corp., or Ideal Industries Inc.

PART 3 EXECUTION

3.01 INSTALLATION

OMIT THE EXCEPTIONS IN PARAGRAPH BELOW IF NOT APPLICABLE, OR MODIFY TO SUIT.

A. Install conductors in raceways after the raceway system is completed. Exceptions: Type MC, MI, or other type specifically indicated on the drawings not to be installed in raceways.

B. No grease, oil, or lubricant other than wire-pulling compounds specified may be used to facilitate the installation of conductors.

3.02 CIRCUITING

USE PARAGRAPH BELOW FOR NEW WORK.

A. Do not change, group or combine circuits other than as indicated on the drawings.

USE PARAGRAPH BELOW FOR REHAB. WORK WHEN ALLOWING REUSE OF EXISTING RACEWAYS.

B. Do not change, group or combine circuits other than as indicated on the drawings except as permitted under Section 260532 when reusing existing raceways.

3.03 COMMON NEUTRAL CONDUCTOR

A. A common neutral may be used for 2 or 3 branch circuits where the circuits are indicated on the drawings to be enclosed within the same raceway, provided each branch circuit is connected to different phase busses in the panelboard.

B. Exceptions - The following circuits shall have a separate neutral: LIST ADDITIONAL CIRCUITS OR INDICATE ON DRAWINGS CIRCUITS THAT REQUIRE SEPARATE NEUTRALS.
1. Circuits containing ground fault circuit interrupter devices.
2. Circuits containing solid state dimmers.
3. Circuits recommended by equipment manufacturers to have separate neutrals.

### 3.04 CONDUCTOR SIZE

**A. Conductor Size:**

**INDICATE CONDUCTOR SIZES ON THE DRAWINGS IF OTHER THAN THAT LISTED.**

1. For Electric Light and Power Branch Circuits: Install conductors of size shown on drawings. Where size is not indicated, the minimum size allowed is No. 12 AWG.
2. For Class 1 Circuits:
   a. No. 18 and No. 16 AWG may be used provided they supply loads that do not exceed 6 amps (No. 18 AWG), or 8 amps (No. 16 AWG).
   b. Larger than No. 16 AWG: Use to supply loads not greater than the amperages given in NFPA 70 Section 310.15.
3. For Class 2 Circuits: Any size to suit application.
4. For Class 3 Circuits: Minimum No. 18 AWG.

### 3.05 COLOR CODING

**CHANGE 120/208 TO 120/240 IF REQUIRED.**

**A. Color Coding for 120/208 Volt Electric Light and Power Wiring:**

1. **Color Code:**
   a. 2 wire circuit - black, white.
   b. 3 wire circuit - black, red, white.
   c. 4 wire circuit - black, red, blue, white.
2. White to be used only for an insulated grounded conductor (neutral). If neutral is not required use black and red, or black, red and blue for phase to phase circuits.
   a. “White” for Sizes No. 6 AWG or Smaller:
      1) Continuous white outer finish, or:
      2) Three continuous white stripes on other than green insulation along its continuous length.
   b. “White” for Sizes Larger Than No. 6 AWG:
      1) Continuous white outer finish, or:
      2) Three continuous white stripes on other than green insulation along its continuous length, or:
      3) Distinctive white markings (color coding tape) encircling the conductor, installed on the conductor at time of its installation. Install white color coding tape at terminations, and at 1’ 0” intervals in gutters, pullboxes, and manholes.
3. Colors (Black, Red, Blue):

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a. For Branch Circuits: Continuous color outer finish.
b. For Feeders:
   1) Continuous color outer finish, or:
   2) Color coding tapes encircling the conductors, installed on the conductors at time of their installation. Install color coding tapes at terminations, and at 1 0” intervals in gutter, pullboxes, and manholes.

B. Color Coding For 277/480 Volt Electric Light and Power Wiring:
   1. Color Code:
      a. 2 wire circuit — brown, gray.
      b. 3 wire circuit — brown, yellow, gray.
      c. 4 wire circuit — brown, yellow, orange, gray.
   2. Gray to be used only for an insulated grounded conductor (neutral). If neutral is not required use brown and yellow, or brown, yellow and orange for phase to phase circuits.
      a. “Gray” For Sizes No. 6 AWG or Smaller.
         1) Continuous gray outer finish.
      b. “Gray” For Sizes Larger Than No. 6 AWG:
         1) Distinctive gray markings (color coding tape) encircling the conductor, installed on the conductor at time of its installation. Install gray color coding tape at terminations, and at 1 0” intervals in gutters, pullboxes, and manholes.
      c. Colors (Brown, Yellow, Orange):
      d. For Branch Circuits: Continuous color outer finish.
      e. For Feeders:
         1) Continuous color outer finish, or:
         2) Color coding tapes encircling the conductors, installed on the conductors at the time of their installation. Install color coding tapes at terminations, and at 1 0” intervals in gutters, pullboxes, and manholes.

C. More Than One Nominal Voltage System Within A building: Permanently post the color coding scheme at each branch-circuit panelboard.

D. Existing Color Coding Scheme: Where an existing color coding scheme is in use, match the existing color coding if it is in accordance with the requirements of NFPA 70.

E. Color Code For Wiring Other Than Electric Light and Power: In accordance with ICEA standard S-73-532 (NEMA WC57-2004). Other coding methods may be used, as approved.

3.06 IDENTIFICATION

A. Identification Tags: Use tags to identify feeders and designated circuits. Install
tags so that they are easily read without moving adjacent feeders or requiring removal of arc proofing tapes. Attach tags with non-ferrous wire or brass chain.

1. Interior Feeders: Identify each feeder in pullboxes and gutters. Identify by feeder number and size.
2. Exterior Feeders: Identify each feeder in manholes and in interior pullboxes and gutters. Identify by feeder number and size, and also indicate building number and panel designation from which feeder originates.
3. Street and Grounds Lighting Circuits: Identify each circuit in manholes and lighting standard bases. Identify by circuit number and size, and also indicate building number and panel designation from which circuit originates.

B. Identification Plaque: Where a building or structure is supplied by more than one service, or has any combination of feeders, branch circuits, or services passing through it, install a permanent plaque or directory at each service, feeder and branch circuit disconnect location denoting all other services, feeders, or branch circuits supplying that building or structure or passing through that building or structure and the area served by each.

3.07 WIRE MANAGEMENT

A. Use wire management products to bundle, route, and support wiring in junction boxes, pullboxes, wireways, gutters, channels, and other locations where wiring is accessible.

3.08 EQUIPMENT GROUNDING CONDUCTOR

A. Install equipment grounding conductor:
   1. Where specified in other Sections or indicated on the drawings.
   2. In conjunction with circuits recommended by equipment manufacturers to have equipment grounding conductor.

B. Equipment grounding conductor is not intended as a current carrying conductor under normal operating circumstances.

C. Color Coding For Equipment Grounding Conductor:
   2. “Green” For sizes No. 6 AWG or Smaller:
      a. Continuous green outer finish, or:
      b. Continuous green outer finish with one or more yellow stripes, or:
      c. Bare copper (see exception below).
   3. “Green” For Sizes Larger Than No. 6:
      a. Stripping the insulation or covering from the entire exposed length (see exception below).
      b. Marking the exposed insulation or covering with green color
coding tapes.

c. Identify at each end and at every point where the equipment
grounding conductor is accessible.

3.09 SPECIAL GROUNDING CONDUCTORS

REFERENCES FOR PARAGRAPHS BELOW ARE NFPA 70 250-146 (d) ISOLATED
RECEPTACLES, 530-73 (b) ISOLATED GROUND RECEPTACLES, 640-2 DEFINITIONS, 640-
7 (c) ISOLATED GROUND RECEPTACLES.

REFER TO NFPA 70 ARTICLE 517-160 IF ISOLATED POWER SYSTEMS ARE USED
(OTHER COLOR AND METHODS ARE REQUIRED).

A. Technical Power System Grounding (Equipment grounding conductor isolated
from the premises grounded conductor except at a single grounded termination
point): Install an insulated grounding conductor running with the circuit
conductors for isolated receptacles or utilization equipment requiring an isolated
ground:

2. “Green” For Isolated Grounding Conductor:
   a. Continuous green outer finish, or:
   b. Continuous green outer finish with one or more yellow stripes,
   and:
   c. Different than the “green” used for the equipment grounding
   conductor run with the circuit (where required).
3. Install label at every point where the conductor is accessible, identifying it
   as an “Isolated Grounding Conductor”.

3.10 ARC PROOFING

A. Where indicted on the drawings, arc proof feeders installed in a common pullbox or
manhole as follows:

1. Arc proof new feeders.
2. Arc proof existing feeders that are spliced to new feeders.
3. Arc proof each feeder as a unit (except feeders consisting of multiple sets
   of conductors).
4. Arc proof feeders consisting of multiple sets of conductors by arc proofing
   each set of conductors as a unit.
5. Arc proof feeders with half-lapped layer of 55 mils thick arc proofing tape
   and random wrapped or laced with glass cloth tape or glass-fiber cord. For
   arc proofing tape less than 55 mils thick, add layers to equivalent of 55
   mils thick arc proofing tape.

3.11 INSULATED CONDUCTOR AND CABLE SCHEDULE - TYPES AND USE

A. Electric Light and Power Circuits:

1. Type THHN/THWN-2 or XHHW-2. : Wiring in dry or damp locations
(except where special type insulation is required).

2. THHN/THWN-2, XHHW-2, or USE-2: Wiring in wet locations (except where type USE-2 insulated conductors are specifically required, or special type insulation is required).

3. THHN/THWN-2: Wiring installed in existing raceway systems (except where special type insulation is required).

4. THHN/THWN-2 or XHHW-2: Wiring for electric discharge lighting circuits (fluorescent, HID), except where fixture listing requires wiring rated higher than 90° C.

5. THHN/THWN-2 Marked “Gasoline and Oil Resistant”: Wiring to gasoline and fuel oil pumps.

6. USE-2: Wiring indicated on the drawings to be direct burial in earth.

7. USE-2 Marked “Sunlight Resistant”:
   a. Service entrance wiring from overhead service to the service equipment.
   b. Wiring exposed to the weather and unprotected (except where special type insulation is required).

8. MC:
   a. Branch circuit wiring in wood framed construction (wood joists and wood stud partitions):
      1) Install conductors parallel with joists or studs and attach to the side of these timbers by galvanized straps spaced not more than 6 feet apart.
      2) Install conductors through holes bored in the center of the timbers when running at right angles to joists or studs.
      3) Do not attach the conductors to the edge of joists or studs.
   b. Branch circuit wiring in movable metal partitions and movable gypsum partitions.
      1) Install conductors in accordance with partition manufacturer's recommendations.
   c. Branch circuit wiring in metal stud partitions:
      1) Install conductors parallel with studs and attach to the side by galvanized straps spaced not more than 6 feet apart.
      2) Install conductors through holes bored in the center of the metal member when running at right angles to studs.
         a) Conductors shall be protected by listed bushings or listed grommets covering all metal edges.
      3) Do not attach the conductors to the edge of studs.

9. MI:
   a. Wiring for underplaster extensions.
   b. Wiring in areas where indicated on drawings.
   c. Where MI cable is installed in areas subjecting cable to corrosion, use PVC or HDPE jacketed MI cable (nonmetallic jacketed cable is not suitable for use in ducts, plenums or other spaces used for
IDENTIFY THE EMERGENCY FEEDER CIRCUITS AND OTHER FIRE RATED WIRING ON THE DRAWINGS. CHANGE THE TITLE OF THE PARAGRAPHS BELOW TO ENCOMPASS ALL WIRING THAT IS REQUIRED TO HAVE FIRE RATINGS.

B. Emergency Feeder Circuits: Use electrical circuit protective system.

C. Class 1 Circuits: Use Class 1 wiring specified in Part 2 (except where special type insulation is required).

D. Class 2 Circuits: Use Class 2 wiring specified in Part 2 (except where special type insulation is required).

E. Class 3 Circuits: Use Class 3 wiring specified in Part 2 (except where special type insulation is required).

3.12 CONNECTOR SCHEDULE - TYPES AND USE

A. Temperature Rating: Use connectors that have a temperature rating, equal to, or greater than the temperature rating of the conductors to which they are connected.

B. Splices:
   1. Dry Locations:
      a. For Conductors No. 8 AWG or Smaller: Use spring type pressure connectors, indent type pressure connectors with insulating jackets, or connector blocks (except where special type splices are required).
      b. For Conductors No. 6 AWG or Larger: Use connector blocks or uninsulated indent type pressure connectors. Fill indentions in uninsulated connectors with electrical filler tape and apply insulation tape to insulation equivalent of the conductor, or insulate with heat shrinkable splices or cold shrink splices.
      c. Gutter Taps in Panelboards: For uninsulated type gutter taps fill indentions with electrical filler tape and apply insulation tape to insulation equivalent of the conductor, or insulate with gutter tap cover.
   2. Damp Locations: As specified for dry locations, except apply moisture sealing tape over the entire insulated connection (moisture sealing tape not required if heat shrinkable splices or cold shrink splices are used).
   3. Wet Locations: Use uninsulated indent type pressure connectors and insulate with resin splice kits, cold shrink splices or heat shrinkable splices. Exception: Splices above ground which are totally enclosed and protected in NEMA 3R, 4, 4X enclosures may be spliced as specified for damp locations.
C. Terminations:
1. For Conductors No. 10 AWG or Smaller: Use terminals for:
   a. Connecting wiring to equipment designed for use with terminals.
2. For Conductors No. 8 AWG or Larger: Use compression or mechanical type lugs for:
   a. Connecting cables to flat bus bars.
   b. Connecting cables to equipment designed for use with lugs.
3. For Conductor Sizes Larger Than Terminal Capacity On Equipment:
   Reduce the larger conductor to the maximum conductor size that terminal can accommodate (reduced section not longer than one foot). Use compression or mechanical type connectors suitable for reducing connection.

END OF SECTION
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SECTION 260526 - SERVICE GROUNDING AND BONDING

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Catalog sheets, specifications and installation instructions.

PART 2 PRODUCTS

2.01 MATERIALS

A. Ground Clamps (Cable to Pipe): Blackburn/T&B Corp.’s GUV, Burndy’s GAR, GD, GP, GK, or OZ/Gedney Co.’s ABG, CG.

B. Ground Clamps (Cable to Rod): Blackburn/T&B Corp.’s GG, GGH, JAB, GUV, Burndy's GP, GX, GRC, or OZ/Gedney Co.’s ABG.

C. Ground Lugs: Copper, one or 2 hole style (to suit conditions), long barrel; Anderson/Hubbell’s VERSAtile VHCL, Blackburn/T&B Corp.’s Color-Coded CTL, LCN, Burndy’s Hylug YA, 3M Scotchlok 31036 or 31145 Series, or Thomas & Betts Corp.’s 54930BE or 54850BE Series.

D. Exothermic Type Weld: Erico Inc.’s Cadweld Process, or Furseweld/T&B Corp.’s Exothermic Welding System.

E. Compression Connectors: Amp Inc.’s Ampact Copper Grounding System, or Burndy's Hyground System.

F. Rod Electrodes: Copper clad (minimum .010 jacket) ground rods minimum 5/8 inches diameter by 8’-0” long.

G. Plate Electrodes: Copper plates minimum 0.06 inches thick by 2’-0” square feet of surface area.

H. Grounding Electrode Conductors and Bonding Conductors: Copper conductors, bare or insulated with THW, THW-2, XHHW, XHHW-2, THWN, THWN-2 or THHN insulation.

I. Hardware: Silicon-bronze bolts, nuts, flat and lock washers etc. as manufactured by Burndy, or OZ/Gedney Co.

PART 3 EXECUTION

3.01 INSTALLATION

A. Connections:
NY Rising – Governor’s Office of Storm Recovery
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SECTION 260526 - SERVICE GROUNDING AND BONDING

1. Make grounding and bonding connections, except buried connections, with silicon-bronze hardware and ground clamps, ground lugs or compression connectors, to suit job conditions.

2. For buried connections use exothermic type weld or compression connectors.

END OF SECTION
NY Rising – Governor’s Office of Storm Recovery  
GOSR Work Order Number: NTF-1-DES  
Edgewater Park Volunteer Fire Department — Storm Hardening and Abatement  

SECTION 260531 - EXPOSED CONDUIT - WET LOCATIONS

PART 1 GENERAL

1.01 REFERENCES
   A. NEMA, ANSI, and UL.

1.02 SUBMITTALS
   A. Product Data: Catalog sheets, specifications and installation instructions.

1.03 MAINTENANCE
   Not Used

PART 2 PRODUCTS

2.01 RACEWAYS
   A. Rigid Ferrous Metal Conduit: Steel, hot dipped galvanized on the outside and inside UL categorized as Rigid Ferrous Metal Conduit (identified on UL Listing Mark as Rigid Metal Conduit - Steel, or Rigid Steel Conduit), by Allied Tube & Conduit Corp., LTV Copperweld, or Wheatland Tube Co.

   B. Liquid-tight Flexible Metal Conduit: UL categorized as liquid-tight flexible metal conduit (identified on UL Listing Mark as Liquid-Tight Flexible Metal Conduit, also specifically marked with temperature and environment application data), by AFC Cable Systems Inc., Anamet Electrical Inc., Electri-Flex Co., or Universal Metal Hose Co.


2.02 FITTINGS AND ACCESSORIES
   A. Connectors and Couplings:
      1. Couplings (For Rigid Metal Conduit): Standard threaded couplings as furnished by conduit manufacturer.
      2. Watertight Conduit Hubs: Cooper/Crouse Hinds' Myers Hubs (stainless steel), OZ/Gedney Co.’s Type CH-T (hot dipped galvanized finish).
      3. Liquid-tight Flexible Metal Conduit Connectors: OZ/Gedney Co.’s 4Q-TG Series (hot-dip/mechanically galvanized), or Thomas & Betts Corp.’s 3322 Series (PVC coated).
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SECTION 260531 - EXPOSED CONDUIT - WET LOCATIONS

B Conduit Bodies (Threaded): Malleable iron or cast iron alloy bodies and covers with hot dipped galvanized or other specified corrosion resistant finish; Cooper/Crouse-Hinds’ Condulets (Corro-free epoxy powder coat), Thomas & Betts Corp.’s Conduit Bodies (hot dipped galvanized), or OZ/Gedney Co.’s Conduit Bodies (hot dipped galvanized). Stainless steel cover screws, covers gasketed to suit application.

C. Expansion Fittings: Cooper/Crouse-Hinds XJG (Corro-free epoxy powder coat), OZ Gedney Co.’s AX, EXE (end type, hot dipped galvanized), or Thomas & Betts Corp.’s XJG (hot dipped galvanized).

D Deflection Fittings: Ductile iron couplings with hot dipped galvanized finish, neoprene sleeve, and stainless steel bands, Appleton Electric Co.’s CF; or bronze couplings, neoprene sleeve, and stainless steel bands, OZ/Gedney Co.’s Type DX.

E Sealing Fittings: Malleable iron body with hot dipped/mechanically galvanized finish, neoprene sleeve, and stainless steel bands, Appleton electric Co.’s CF; or bronze couplings, neoprene sleeve, and stainless steel bands, OZ/Gedney Co.’s Type DX.

1. Horizontal: Cooper/Crouse-Hinds’ EYS with Chico A sealing compound and Chico X filler, OZ/Gedney Co.’s EYD with EYC sealing compound and EYF damming fiber, or Thomas & Betts Corp.’s. EYS w/Chico A sealing compound and Chico X filler.

2. Vertical (with Drain): Cooper/Crouse-Hinds with Chico A sealing compound and Chico X filler, OZ/Gedney Co.’s EY, EYA with EYC sealing compound and EYF damming fiber, or Thomas & Betts Corp.’s. w/Chico A sealing compound and Chico X filler.

3. Other Type Fittings. As required to suit installation requirements, by Cooper/Crouse-Hinds, OZ/Gedney Co., or Thomas & Betts Corp. with hot dipped/mechanically galvanized finish or epoxy powder coat.

F Service Entrance Caps/Heads: Hot dipped/mechanically galvanized finish; OZ/Gedney Co.’s 17-50G Series.

G Vertical Conductor Supports: Kellems/Hubbell Inc.’s Conduit Riser Grips (stainless steel or tin coated bronze), or OZ/Gedney Co.’s hot dipped galvanized finish Type CMT or Type W.

H Conduit Clamps and Back Spacers: Malleable iron, hot dipped/mechanically galvanized finish; Cooper/Crouse-Hinds’ 510 and CB1 Series, OZ/Gedney Co.’s 14-G and 141G Series, or Thomas & Betts Corp.’s 1275 and 1350 Series.

I Drains and Breathers: Stainless steel; Appleton Electric Co.’s ECBD, Cooper/Crouse-Hinds’ ECD, OZ/Gedney Co.’s Type DB, or Thomas & Betts Corp.’s Type ECD.
3.01 RACEWAY INSTALLATION - GENERAL

A. Number of Raceways: Do not change number of raceways to less than the number indicated on the drawings.
   1. Each raceway shall enclose one circuit unless otherwise indicated on the drawings.

B. Conduit Size: Not smaller than 3/4 inch electrical trade size.

C. Conduit Bends: For 3/4 inch conduits, bends may be made with manual benders. For all conduit sizes larger than 3/4 inch, manufactured or field fabricated offsets or bends may be used. Make field fabricated offsets or bends with an approved hydraulic bender.

D. Conduit Exposed in Indoor Wet Locations: Install entire wiring system including conduit, boxes, and fittings so that there is a 1/4 inch air space between it and the wall or supporting surface.

3.02 RACEWAY SCHEDULE - TYPES & USE

A. Rigid Ferrous Metal Conduit: Install in all wet locations unless otherwise specified or indicated on the drawings.

B. Liquid-tight Flexible Metal Conduit: Install equipment grounding conductor in liquid-tight flexible metal conduit and bond at each box or equipment to which conduit is connected:
   1. Use 1 to 3 feet of liquid-tight flexible metal conduit (UL listed and marked for the installation’s temperature and environmental conditions) for final conduit connection to:
      a. Motors with weather-protected or totally enclosed housings.
      b. Equipment subject to vibration.
      c. Equipment requiring flexible connection for adjustment or alignment.

C. Rigid Nonmetallic PVC Conduit: Use at locations indicated on drawings.

3.03 FITTINGS AND ACCESSORIES SCHEDULE

A. General:
   1. Use malleable iron or cast iron alloy fittings and accessories having hot dipped/mechanically galvanized finish or other specified corrosion resistant finish in conjunction with ferrous raceways unless otherwise specified or indicated on the drawings.
   2. Use caps or plugs to seal ends of conduits until wiring is installed (to exclude foreign material).
   3. Use expansion fittings:
SECTION 260531 - EXPOSED CONDUIT - WET LOCATIONS

a. Where raceways cross expansion joints.
b. At intervals not exceeding 75 feet in straight runs (outside installations).
c. Between fixed equipment (outside installations).

4. Use deflection fittings where raceways cross expansion joints that move in more than one plane.

5. Use watertight hub on end of each conduit entering cabinets or boxes that are not constructed with integral threaded hubs.

6. Use back spacers behind each conduit clamp to keep raceway off surface to which it is attached and arranged to allow raceway to move due to expansion and contraction (outside installations).

7. Use drains in low points of the system to drain condensation, keeping interior of raceway system free of moisture. Also use breather at high point of the system for outside installations.

B. For Rigid Metal Conduit: Use threaded fittings.

C. For Liquid-tight Flexible Metal Conduit: Use liquid-tight connectors.

D. For Rigid Nonmetallic PVC Conduit: Use conduit manufacturer's corrosion resistant fittings and accessories.

END OF SECTION
PART 1 GENERAL

1.01 REFERENCES

A. NEMA, and UL.

1.02 SUBMITTALS

A. Product Data: Catalog sheets, specifications and installation instructions.
   1. For fire rated construction, prove that materials and installation methods
      proposed for use are in accordance with the listing requirements of the
      classified construction.

PART 2 PRODUCTS

2.01 GALVANIZED STEEL OUTLET BOXES

A. Standard galvanized steel boxes and device covers by Appleton Electric Co.,
   Beck Mfg./Picoma Industries, Cooper/Crouse-Hinds, Raco/Div. of Hubbell, or
   Steel City/T & B Corp.

2.02 GALVANIZED STEEL JUNCTION AND PULL BOXES

A. Code gage, galvanized steel screw cover boxes by Delta Metal Products Inc.,
   Hoffman Enclosures Inc., Hubbell Wiegmann, Lee Products Co., or
   Rittal/Electromate.

2.03 THREADED TYPE BOXES:

A. Outlet Boxes:
   1. For Dry, Damp Locations: Zinc electroplate malleable iron or cast iron
      alloy boxes by Appleton Electric Co., Cooper/Crouse-Hinds Co., or OZ/Ge
      dney Co., with zinc electroplate steel covers to suit application.
   2. For Wet Locations: Malleable iron or cast iron alloy boxes with hot
      dipped galvanized or other specified corrosion resistant finish as
      produced by Cooper/Crouse-Hinds (hot dipped galvanized or Corro-free
      epoxy powder coat), or OZ/Gedney Co. (hot dipped galvanized), with
      stainless steel cover screws, and malleable iron covers gasketed to suit
      application.

B. Junction And Pull Boxes:
   1. For Dry, Damp Locations: Zinc electroplate cast iron boxes by Appleton
      Electric Co., Cooper/Crouse-Hinds, or OZ/Gedney Co., with zinc
      electroplate steel or cast iron cover.
   2. For Wet Locations: Cast iron boxes by Cooper/Crouse-Hinds’ (hot
      dipped galvanized or Corro-free epoxy powder coat), or OZ/Gedney Co.
      (hot dipped galvanized), with stainless steel cover screws and cast iron
      cover gasketed to suit application.
C. Conduit Bodies, Threaded (Provided with a Volume Marking):
   1. For Dry, Damp Location: Zinc electroplate malleable iron or cast iron alloy bodies with zinc electroplate steel covers; Appleton Electric Co.’s Unilets, Cooper/Crouse-Hinds’ Condulets, or OZ/Gedney Co.’s Conduit Bodies.
   2. For Wet Locations: Malleable iron or cast iron alloy bodies with hot dipped galvanized or other specified corrosion resistant finish; Cooper/Crouse-Hinds’ Condulets (hot dipped galvanized or Corro-free epoxy power coat), or OZ/Gedney Co.’s Conduit Bodies (hot dipped galvanized) with stainless steel cover screws and malleable iron covers gasketed to suit application.

2.04 CORROSION RESISTANT BOXES
   A. Non-Metallic Junction and Pullboxes: Glass fiber reinforced polyester; Carlon/Div. of Lamon and Sessions’ Himeline Series, Cooper/Crouse-Hinds’ Krydon Products, or Robroy Industries’ Stahlin Enclosures.

2.05 SPECIFIC PURPOSE OUTLET BOXES
   A. As fabricated by manufacturers for mounting their equipment.

2.06 FINISHING COLLAR OR COMBINATION FINISHING COLLAR/OUTLET BOX (SURFACE MOUNTED EQUIPMENT USED WITH EXPOSED RACEWAY):
   A. Finishing Collar: Same finish and peripheral dimensions as the equipment base, including provisions for mounting, slots to fit over raceway and of depth to cover outlet box and extend back to ceiling or wall.
   B. Combination Finishing Collar/Outlet Box: Same finish and peripheral dimensions as the equipment base, gage or thickness of metal as required by National Electrical Code, including provisions for mounting, and knockouts or threaded bosses for entrance of raceway.

2.08 OUTLET BOXES AND RELATED PRODUCTS FOR FIRE RATED CONSTRUCTION
   A. Parameters For Use of Listed Metallic Outlet or Switch Boxes: UL Electrical Construction Equipment Directory - Metallic Outlet Boxes (QCIT).
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SECTION 260534 - OUTLET, JUNCTION, AND PULL BOXES

PART 3 EXECUTION

3.01 PREPARATION

A. Before proceeding with the installation of junction and pull boxes, check the locations with the Owner's Representative and have same approved.

3.02 INSTALLATION

A. Mounting Position of Wall Outlets For Wiring Devices: Unless otherwise indicated, install boxes so that the long axis of each wiring device will be vertical.

B. Height of Wall Outlets: Unless otherwise indicated, locate outlet boxes with their center lines at the following elevations above finished floor:

<table>
<thead>
<tr>
<th>Lighting Fixtures</th>
<th>6'–0&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lighting Fixtures in Stairway</td>
<td>7'-6&quot;</td>
</tr>
<tr>
<td>Exit Lights</td>
<td>8'-0&quot; where ceiling height allows a minimum of 6 inch clearance between ceiling and top of exit light. Otherwise mount exit light so that it's top is 6 inches below finished ceiling. Adjust height and clearances as required to suit installation over doors.</td>
</tr>
<tr>
<td>Switches</td>
<td>4'-0&quot;</td>
</tr>
<tr>
<td>Single Receptacles</td>
<td>1&quot;–6&quot;*</td>
</tr>
<tr>
<td>Thermostats</td>
<td>5'–0&quot;</td>
</tr>
<tr>
<td>Manual Fire Alarm Boxes</td>
<td>4&quot;–0&quot;</td>
</tr>
<tr>
<td>Audible Notification Appliances</td>
<td>8'-0&quot; where ceiling height allows a minimum of 6 inch clearance between ceiling and top of appliance. Otherwise mount appliance so that it's top is 6 inches below finished ceiling.</td>
</tr>
<tr>
<td>Visible Notification Appliances</td>
<td>Install outlet so that the bottom of the visible lens will be 6'-8&quot; AFF.</td>
</tr>
<tr>
<td>Combination Audible/Visible Notification Appliances</td>
<td>Install outlet so that the bottom of the visual lens will be 6'-8&quot; AFF, and the audible section will be above the visible section.</td>
</tr>
</tbody>
</table>

*In areas containing heating convectors, install outlets above convectors at height indicated on drawings.
SECTION 260534 - OUTLET, JUNCTION, AND PULL BOXES

C. Supplementary Junction and Pull Boxes: In addition to junction and pull boxes indicated on the drawings and required by NFPA 70, provide supplementary junction and pull boxes as follows:
1. When required to facilitate installation of wiring.
2. At every third 90 degree turn in conjunction with raceway sizes over 1 inch.
3. At intervals not exceeding 100 feet in conjunction with raceway sizes over 1 inch.

3.03 OUTLET, JUNCTION, AND PULL BOX SCHEDULE

A. Boxes For Concealed Conduit System:
1. Non-Fire Rated Construction:
   a. Depth: To suit job conditions and comply with NFPA 70 Article 370.
   b. For Lighting Fixtures: Use galvanized steel outlet boxes designed for the purpose.
      1) For Fixtures Weighing 50 lbs. or Less: Box marked “FOR FIXTURE SUPPORT”.
      2) For Fixtures More Than 50 lbs: Box listed and marked with the weight of the fixture to be supported (or support fixture independent of the box).
   c. For Junction and Pull Boxes: Use galvanized steel boxes with flush covers.
   d. For Switches, Receptacles, Etc:
      1) Plaster or Cast-In-Place Concrete Walls: Use 4 inch or 4-11/16 inch galvanized steel boxes with device covers.
      2) Walls Other Than Plaster or Cast-In-Place Concrete: Use type of galvanized steel box which will allow wall plate to cover the opening made for the installation of the box.

2. Other Fire Rated Construction: Use materials and methods to comply with the listing requirements for the classified construction.

B. Boxes For Exposed Conduit System:
1. Dry and Damp Locations: Use zinc electroplate or hot dipped galvanized threaded type malleable iron or cast iron alloy outlet, junction, and pullboxes or conduit bodies provided with a volume marking in conjunction with ferrous raceways unless otherwise specified or indicated on the drawings.
   a. Galvanized steel boxes may be used in conjunction with conduit sizes over 1 inch in non-hazardous dry and damp locations.
   b. Galvanized steel boxes may be used in conjunction with electrical metallic tubing where it is allowed (specified) to be installed exposed as branch circuit conduits at elevations over 10’-0” above finished floor.
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SECTION 260534 - OUTLET, JUNCTION, AND PULL BOXES

2. Wet Locations: Use threaded type malleable iron or cast iron alloy outlet junction, and pullboxes or conduit bodies (provided with a volume marking) with hot dipped galvanized or other specified corrosion resistant coating in conjunction with ferrous raceways unless otherwise specified or indicated on the drawings.  
   a. Use corrosion resistant boxes in conjunction with plastic coated rigid ferrous metal conduit.

3. Finishing Collar or Combination Finishing Collar/Outlet Box (Surface Mounted Equipment Used With Exposed Raceway):  
   a. Use finishing collar where surface mounted equipment is installed on an exposed raceway outlet box and the equipment base is larger than the outlet box.  
   b. Use combination finishing collar/outlet box where surface mounted equipment is not indicated to be installed on an exposed raceway outlet box, but raceway cannot be run directly into equipment body due to equipment design.

C. Specific Purpose Outlet Boxes: Use to mount equipment when available and suitable for job conditions. Unless otherwise specified, use threaded type boxes with finish as specified for exposed conduit system, steel (painted) for surface metal raceway system and galvanized steel for recessed installations.

END OF SECTION
SECTION 260925

OCCUPANCY SENSORS FOR LIGHTING CONTROL

PART 1  GENERAL

1.01  SUBMITTALS

A. Waiver of submittals: The “Waiver of Certain Submittals Requirements” in Section 013300 does not apply to this Section.

B. Submittals Package: Submit the shop drawings, and the product data specified below at the same time as a package.

C. Shop Drawings (For Sensor Systems):
   1. Composite wiring and/or schematic diagram of each control circuit as proposed to be installed (standard diagrams will not be accepted).
   2. Scale drawing for each area showing exact location of each sensor, switching module, and on-off-auto switch.

D. Product Data: Catalog sheets, specifications and installation instructions.
   1. Include data for each sensor which:
      a. Indicates where sensor is proposed to be installed.
      b. Proves that the sensor is suitable for the proposed application.

PART 2  PRODUCTS

MANY OF THE SPECIFIED SENSORS HAVE A MINIMUM LOAD REQUIREMENT (APPROXIMATELY 120W FLUORESCENT AT 120V, 40W INCANDESCENT AT 120V, 200W FLUORESCENT AT 277V). SENSORS AS SPECIFIED, ARE SUITABLE FOR 120 OR 277VAC CIRCUITS.

2.01  INFRARED WALL SWITCH

A. Type IWS: Wall switch type passive infrared occupancy sensor with built-in override control (off-auto). Furnish the Company's model which suits the electrical system parameters, and accommodates the square footage coverage and wattage requirement for each area (and type of lighting) controlled; Bryant's MSWS800, Leviton's 6775, Pass & Seymour's OSC3000-1, Tork's PS51A, UEC's SOM-500, or Watt Watcher Inc.’s WI.

2.02  INFRARED WALL OR CEILING MOUNTED SENSOR SYSTEM

A. Type IWCM: Wall or ceiling mounted (to suit installation) passive infrared occupancy sensor system. Furnish the Company's system which accommodates the square footage coverage and wattage requirements for each area (and type of
SECTION 260925- OCCUPANCY SENSORS FOR LIGHTING CONTROL

lighting) controlled, utilizing switching modules and accessories which suits the electrical system parameters; Bryant Electric’s MSCM Series, Leviton’s 6773/6774, Pass & Seymour’s Switchplan OSC, Tork’s PC10 Series, UEC’s AlCS, or Watt Watcher Inc.’s PIR:


   IF RECESSED, VERIFY THAT WALLS WILL BE THICK ENOUGH TO ACCOMMODATE RECESSED BOX.

   a. Recessed, semi-recessed, or surface mounted as indicated on the drawings.
   b. Height, width, and depth as required to accommodate wiring, switching modules, and terminal blocks.
   c. For wiring connections equip enclosures with barrier type double screw terminals rated 600V, meeting UL 94 requirements for materials classed 94V-O.
   d. Use identification strips, tags, or labels to identify each conductor within enclosure.
   e. Indicate purpose of enclosure. Provide engraved phenolic or aluminum nameplate or front of enclosure stating SWITCHING MODULES in 1/4 inch high lettering.

2. On-Off-Auto Switches: Maintained contact, single pole, double throw, center off:


2.03 ULTRASONIC CEILING MOUNTED SENSOR SYSTEM

USE 700 SQ FT AS DESIGN GUIDE FOR ULTRASONIC CEILING MOUNTED SENSOR.

A. Type UCM: Ceiling mounted ultrasonic occupancy sensor system. Furnish the Company's system which accommodates the square footage coverage and wattage requirement for each area (and type of lighting) controlled, utilizing switching modules and accessories which suits the electrical system parameters; Light-O-Matic’s 01-072/01-083, Tork's M750P, UEC's UMD-700/UMD-1100, or Watt Watcher's W series:


   IF RECESSED, VERIFY THAT WALLS WILL BE THICK ENOUGH TO ACCOMMODATE RECESSED BOX.
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1. Recessed, semi-recessed, or surface mounted as indicated on the drawings.
2. Height, width, and depth as required to accommodate wiring, switching modules, and terminal blocks.
3. For wiring connections equip enclosures with barrier type double screw terminals rated 600V, meeting UL 94 requirements for materials classed 94V-O.
4. Use identification strips, tags, or labels to identify each conductor within enclosure.
5. Indicate purpose of enclosure. Provide engraved phenolic or aluminum nameplate or front of enclosure stating SWITCHING MODULES in 1/4 inch high lettering.
6. On-Off-Auto Switches: Maintained contact, single pole, double throw, center off:

PART 3 EXECUTION

3.01 INSTALLATION

A. Install the Work of this Section in accordance with manufacturer's printed instructions unless otherwise indicated.

B. Adjust sensitivity so that controlled area is lighted when area is occupied.

TIME DELAY IS ADJUSTABLE FROM 7 SECONDS TO 30 MINUTES. SPECIFY TIME DELAY TO SUIT AREA CONDITIONS.

C. Adjust time delay so that controlled area remains lighted for 5 minutes after occupant leaves area.

D. For sensors that are equipped with light level sensors, adjust light level setting so that lights are off when there is sufficient natural light.

END OF SECTION
SECTION 262416

PANELBOARDS

PART 1 GENERAL

1.01 REFERENCES


1.02 SUBMITTALS

A. Waiver of Submittals: The “Waiver of Certain Submittal Requirements” in Section 013300 does not apply to this Section.

B. Submittal Packages: Submit the shop drawings, product data, and the quality control submittals specified below at the same time as a package.

C. Shop Drawings; include the following for each panelboard:
   1. Cabinet and gutter size.
   2. Voltage and current rating.
   3. Panelboard short circuit rating: Fully rated equipment is required.
      a. Indicate circuit breakers are suitable for the panelboards’ fully rated equipment rating. Series rated combinations will not be considered.
   5. When indicated on the drawings, a coordinated selective scheme between the main circuit breaker and branch/feeder circuit breakers so that under fault conditions the branch/feeder circuit breaker clears the fault while the main circuit breaker remains closed.
   6. Submit time current characteristic curves for each overcurrent protective device contained within each panelboard on a single log-log graph.
   7. Cable terminal sizes
   10. Accessories.

D. Product Data:
   1. Catalog sheets, specifications and installation instructions.
   2. Bill of materials.

E. Quality Control Submittals:
   1. List of Completed Installations: If brand names other than those specified are proposed for use, furnish the name, address, and telephone number of at least 5 comparable installations that can prove the proposed products have operated satisfactorily for one year.
SECTION 262416 - PANELBOARDS

2. Company Field Advisor Data: Include:
   a. Name, business address and telephone number of Company Field Advisor secured for the required services.
   b. Certified statement from the Company listing the qualifications of the Company Field Advisor.
   c. Services and each product for which authorization is given by the Company listed specifically for this project.

F. Contract Closeout Submittals:
   1. System acceptance test report.
   2. Certificate: Affidavit, signed by the Company Field Advisor and notarized, certifying that the system meets the contract requirements and is operating properly.
   3. Operation and Maintenance Data: Deliver 2 copies, covering the installed products, to the Owner's Representative.

PART 2 PRODUCTS

2.01 PANELBOARDS

A. The listing of specific manufacturers does not imply acceptance of their products that do not meet the specified ratings, features and functions. Manufacturers listed are not relieved from meeting these specifications in their entirety.

B. As produced by Cutler-Hammer/Eaton Corp. with LT Trim (Eaton EZ Trim shall not be considered), General Electric Co., Siemens or Square D Co., having:
   1. Flush or surface type cabinets as indicated on the drawings.
   2. Increased gutter space for gutter taps, sub-feed wiring, through-feed wiring, oversize lugs.
   3. SUITABLE FOR USE AS SERVICE EQUIPMENT where used as service equipment.
   4. Door and one piece trim. Door fastened to trim with butt or piano hinges. Trim fastened to cabinet with devices having provision for trim adjustment.
   5. Yale No. 511S locks with brass cylinder rosette, blind fastened from inside of door. 2 No. 47 keys with each lock (Exception: Not more than 7 keys, total).
   6. Solid copper bus bars. Ampere rating of bus bars not less than frame size of main circuit breaker.
   7. Ratings as indicated on the drawings.
   8. Full capacity copper neutral bus where neutrals are required.
   9. Copper equipment grounding bus.
   10. Sections designated “space” or “provision for future breaker” equipped to accept future circuit breakers.
   11. Lock on devices for exit light, fire alarm, stair well circuits.

14. Short circuit rating not less than indicated on panelboard schedule. Furnish fully rated equipment (the short circuit rating of the panelboard is equal to the lowest interrupting rating of any device installed in the panelboard).

15. Thermal magnetic, molded case, bolt-on circuit breakers:
   a. Mounting: Individually mounted main circuit breaker (when MCB is required), and group mounted branch/feeder circuit breakers to accommodate the circuit breaker style and panelboard construction.
   b. Components: See panelboard schedule for specific components required for each circuit breaker. In addition to the specific components, equip each circuit breaker with additional components as required to achieve a coordinated selective scheme between the main circuit breaker and the branch/feeder circuit breakers.
   c. Single pole 15 ATE and 20 ATE circuit breakers marked SWD where used as switches.
   d. Single pole and two pole 15, 20, and 30 ATE circuit breakers rated for high intensity discharge lighting loads when applicable.

2.02 NAMEPLATES

A. General: Precision engrave letters and numbers with uniform margins, character size minimum 3/16 inch high.
   1. Phenolic: Two color laminated engravers stock, 1/16 inch minimum thickness, machine engraved to expose inner core color (white).
   2. Aluminum: Standard aluminum alloy plate stock, minimum .032 inches thick, engraved areas enamel filled or background enameled with natural aluminum engraved characters.
   3. Materials for Outdoor Applications: As recommended by nameplate manufacturer to suit environmental conditions.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install panelboards in accordance with NEMA Publication No. PB1.1 “General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less”.

B. Flush Cabinets: Set flush cabinets so that edges will be flush with the finished wall line. Where space will not permit flush type cabinets to be set entirely in the wall, set cabinet as nearly flush as possible, and cover the protruding sides with the trim extending over the exposed sides of the cabinet and back to the finished wall line.
C. Directory: Indicate on typewritten directory the equipment controlled by each circuit breaker, and size of feeder servicing panelboard. For power panelboards also include ATE rating and feeder size for each breaker.

D. Remove the neutral to ground main/system bonding jumper unless the panelboard is used for a service entrance or if the panel if fed by a separately derived system. Turn the bonding jumper over to the Owner's Representative.

E. Identification:
   1. Use nameplates, or stencil on front of each panelboard with white paint, “LP-1, PP-1, etc.” in 1/2 inch lettering corresponding to panelboard designations on the drawings, and electrical parameters (phase, wire, voltage).
   2. Install a nameplate on each panelboard that explains the means of identifying each ungrounded system conductor by phase and system. Examples of nameplate statements:
      a. Identification of 120/240 Volt Circuit Conductors:
         2 wire circuit - white*, black.
         3 wire circuit - white*, black, red.
         4 wire circuit - white*, black, red, blue.

END OF SECTION
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SECTION 262811 - MAIN SERVICE DISCONNECT - UNDER 600V  

PART 1 GENERAL  

1.01 SUBMITTALS  

A. Waiver of Submittals: The “Waiver of Certain Submittal Requirements” in Section 013300 does not apply to this Section.  

B. Product Data: Catalog sheets, specifications and installation instructions.  

C. Contract Closeout Submittals:  
   1. Operation and Maintenance Data: Deliver 2 copies, covering the installed products, to the Owner's Representative.  

PART 2 PRODUCTS  

2.01 MATERIALS  

A. Fusible Disconnect Switch: General Electric Co.’s Type TH, Westinghouse Elec. Corp.’s H-600, Square D Co.’s Heavy Duty Series, or Challenge/FPE Heavy Duty Series having:  
   1. Fuses - See Section 262813.  
   2. NEMA 1 enclosure.  
   3. Solid neutral.  
   4. UL label “Suitable For Use As Service Equipment”.  
   5. Voltage rating, current rating and number of poles as indicated on the drawings.  

   1. NEMA 1 enclosure.  
   2. Solid neutral.  
   3. UL label “Suitable For Use As Service Equipment”.  
   4. Voltage rating, current and number of poles as indicated on the drawings.  
   5. Circuit breaker as follows:  

<table>
<thead>
<tr>
<th>VOLT</th>
<th>POLES</th>
<th>FRAME</th>
<th>ATE/FIXED OR INTERCHANGEABLE</th>
<th>GE</th>
<th>W</th>
<th>C/FPE</th>
<th>S/ITE</th>
<th>CH/EH</th>
</tr>
</thead>
<tbody>
<tr>
<td>240</td>
<td>2or3</td>
<td>100</td>
<td>15-100/F</td>
<td>TED</td>
<td>EHD</td>
<td>SEF</td>
<td>EDA</td>
<td>FS2</td>
</tr>
<tr>
<td>240</td>
<td>2or3</td>
<td>225</td>
<td>70-225/F or I</td>
<td>TFJ/TFK</td>
<td>JB/KB</td>
<td>SF</td>
<td>FXD6</td>
<td>KB</td>
</tr>
<tr>
<td>240</td>
<td>2or3</td>
<td>400</td>
<td>125-400/I</td>
<td>TJK4</td>
<td>KD</td>
<td>SJK</td>
<td>JXD6</td>
<td>JB</td>
</tr>
<tr>
<td>240</td>
<td>2or3</td>
<td>600</td>
<td>450-600/I</td>
<td>TJK6</td>
<td>LA</td>
<td>SJK</td>
<td>LD6</td>
<td>LA</td>
</tr>
</tbody>
</table>

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SECTION 262811 - MAIN SERVICE DISCONNECT - UNDER 600V

<table>
<thead>
<tr>
<th>VOLT</th>
<th>POLES</th>
<th>FRAME</th>
<th>ATE/FIXED OR INTERCHANGEABLE</th>
<th>GE</th>
<th>W</th>
<th>C/FPE</th>
<th>S/ITE</th>
<th>CH/EH</th>
</tr>
</thead>
<tbody>
<tr>
<td>240</td>
<td>2 or 3</td>
<td>800</td>
<td>700-800/I</td>
<td>TKM8</td>
<td>MC</td>
<td>SKM</td>
<td>MD6</td>
<td>MA</td>
</tr>
</tbody>
</table>

*Requires label on breaker stating exchange policy for future ATE requirements.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install main service disconnect on concrete base.

B. Mount main service disconnect on wall so that maximum height above the floor to the center of the operating handle does not exceed 6-1/2 feet.

C. Stencil on front cover of main service disconnect with white paint in minimum 1 inch lettering, the words MAIN SERVICE DISCONNECT, 3 phase, 4 wire, 208 volts.

END OF SECTION
PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. Automatic Transfer Switch: Section 263623.

1.02 SYSTEM DESCRIPTION

A. Description of System:
   1. The generator (generator) is a self-contained manufacturer packaged unit within a weatherproof, sound reducing enclosure designed to operate with an automatic transfer switch, requiring only electric and fuel connections for operation. The sound level due to the sound attenuated Level 2 weather proof enclosure shall not exceed 75 dBA @23 ft.
   2. The generator powers all feeders in the event of failure of the normal power source.
   3. In normal operating condition, the mechanism of the transfer switch is in the normal position and the generator shut down. Sequence of transfer operation occurs as follows:
      a. Upon signal from the Automatic Transfer Switch, the generator automatically starts.
      b. Complete transition from onset of normal feeder failure to emergency feeder transfer shall not exceed 10 seconds.
      c. The generator continues to run until the automatic transfer switch signals for the unit to shut down.

1.03 SUBMITTALS

A. Submittals Package: Submit the product data, shop drawings, and quality control submittals specified below at the same time as a package.

B. Shop Drawings:
   1. Manufacturer's drawings showing the construction (outline) of the generator and accessories.
   2. Installation details.
   3. Housing details including layout of equipment, raceways, piping, etc.

C. Product Data:
   1. Catalog sheets, specifications and installation instructions.
   2. Bill of materials.
   3. Detailed sequence of operations (format similar to SYSTEM DESCRIPTION.
   4. Company's data indicating fuel consumption with the unit operating at 1/2, 3/4 and full load.
   5. Name, address and telephone number of nearest fully equipped service organization.
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SECTION 263214 - STANDBY GENERATOR
D. Quality Control Submittals:
   1. Design Data:
      a. Company's data indicating HP, KW and KVA ratings with proof that the unit will meet the full load test without exceeding NEMA temperature rise specified.
      b. Ampere requirements of the starting system (at the batteries specified minimum ambient temperature) during cranking.
         1) Include engine manufacturer's recommended battery ampere-hour capacity at the minimum ambient temperature condition for the specified duration and number of crank cycles.
         2) Include battery manufacturer's data proving that the batteries will meet the ampere-hour requirements at the batteries minimum ambient temperature.
         3) Include details of battery charger and battery rack recommended by battery manufacturer.

   2. Company Field Advisor Data: Include:
      a. Name, business address and telephone number of Company Field Advisor secured for the required services.
      b. Certified statement from the Company listing the qualifications of the Company Field Advisor.
      c. Services and each product for which authorization is given by the Company, listed specifically for this project.

E. Contract Closeout Submittals:
   1. Operation and Maintenance Data: Deliver 3 copies, covering the installed products, to the Owner's Representative. Include name, address and telephone number of nearest fully equipped service organization.
      a. Operation Manual: Provide three copies of the manufacturer's standard operation manual. Sections shall be separated by heavy plastic dividers with tabs which identify the material in the section. Drawings shall be folded blue lines, with the title block visible, and placed in 8-1/2 by 11 inch plastic pockets with reinforced holes. The manual shall include:
         1) Step-by-step procedures for system startup, operation, and shutdown.
         2) Drawings, diagrams, and single-line schematics to illustrate and define the electrical, mechanical, and hydraulic systems with their controls, alarms, and safety systems.
         3) Procedures for interface and interaction with related systems to include automatic transfer switches.
      b. Maintenance Manual: Provide three copies of the manufacturer's standard maintenance manual. Each section shall be separated by a heavy plastic divider with tabs. Drawings shall be folded, with the title block visible, and placed in plastic pockets with reinforced holes. The manual shall include:
         1) Procedures for each routine maintenance item.
         Procedures for troubleshooting.
SECTION 263214 - STANDBY GENERATOR

2) The manufacturer's recommended maintenance schedule.

3) A component list which includes the manufacturer's name, address, type or style, model or serial number, rating, and catalog number for the major components.

4) A list of spare parts for each piece of equipment and a complete list of materials and supplies needed for operation.


3. Certificate: Affidavit, signed by the Company Field Advisor and notarized, certifying that the system meets the contract requirements and is operating properly.

1.04 QUALITY ASSURANCE

A. Equipment Qualifications For Products Other Than Those Specified:

1. At the time of submission provide written notice to the Engineer of the intent to propose an “or equal” for products other than those specified. Make the “or equal” submission in a timely manner to allow the Engineer sufficient time to review the proposed product.

2. Provide all information requested by Engineer to allow his review and verification of whether the proposed “or equal” unit will be satisfactory and can be approved or use on this project.

3. Provide written certification from the manufacturer that the proposed products are compatible for use with all other equipment proposed for use for this system and meet all contract requirements.

B. Company Field Advisor: Secure the services of a Company Field Advisor for a minimum of 16 working hours for the following:

1. Render advice regarding installation and final adjustment of the system.

2. Witness final system test and then certify with an affidavit that the system is installed in accordance with the contract documents and is operating properly.

3. Train facility personnel on the operation and maintenance of the system (minimum of two 2 hour sessions).

4. Explain available service programs to facility supervisory personnel for their consideration.

C. Service Availability: A fully equipped service organization capable of guaranteeing response time within 8 hours to service calls shall be available 24 hours a day, 7 days a week to service the completed Work.

PART 2 PRODUCTS

2.01 GENERATOR UNIT

A. Generator Operating Parameters:
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Load (Standby Service)</td>
<td>50KW, 1 Phase</td>
</tr>
<tr>
<td>Power Factor</td>
<td>1.0</td>
</tr>
<tr>
<td>Motor Starting kVA (maximum)</td>
<td>63kVA @ 0.8PF</td>
</tr>
<tr>
<td>Maximum Engine Speed</td>
<td>1800rpm</td>
</tr>
<tr>
<td>Engine-Generator Application</td>
<td>Stationary emergency</td>
</tr>
<tr>
<td>Engine Fuel</td>
<td>Ultra-Low Sulfur Diesel Fuel #2</td>
</tr>
<tr>
<td>Engine Cooling Type</td>
<td>50/50 Ethylene Glycol Antifreeze</td>
</tr>
<tr>
<td>Heat Exchanger Type</td>
<td>fin-tube</td>
</tr>
<tr>
<td>Governor Type</td>
<td>Electronic Isochronous</td>
</tr>
<tr>
<td>Frequency Bandwidth percent steady state</td>
<td>+0.25 percent (max.)</td>
</tr>
<tr>
<td>Voltage Regulation (No load to full load)</td>
<td>+2 percent (max.)</td>
</tr>
<tr>
<td>Voltage Bandwidth (steady state)</td>
<td>+0.5 percent (max.)</td>
</tr>
<tr>
<td>Frequency</td>
<td>60 Hz</td>
</tr>
<tr>
<td>Voltage</td>
<td>120/240 Volts</td>
</tr>
<tr>
<td>Phases</td>
<td>Single Phase</td>
</tr>
<tr>
<td>Max Step Load Increase</td>
<td>100 percent of Service Load at 0.8 PF</td>
</tr>
<tr>
<td>Max Step Load Decrease (w/o shutdown)</td>
<td>100 percent of Service Load</td>
</tr>
<tr>
<td>Max Time to Start and be Ready to Assume Load</td>
<td>10 seconds</td>
</tr>
</tbody>
</table>
SECTION 263214 - STANDBY GENERATOR

<table>
<thead>
<tr>
<th>Basis of Design, Generac SD050 Generator Set with 300 gallon Sub base Tank, and Level-1 Acoustic Enclosure, or approved equal, with the following options:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. UL 2200 listing.</td>
</tr>
<tr>
<td>2. Level 1 Acoustic enclosure with custom color finish and stainless steel latches and hinges.</td>
</tr>
<tr>
<td>3. Engine block heater.</td>
</tr>
<tr>
<td>4. Oil heater</td>
</tr>
<tr>
<td>5. Battery warmer.</td>
</tr>
<tr>
<td>6. Battery and charger.</td>
</tr>
<tr>
<td>7. 120v receptacle.</td>
</tr>
<tr>
<td>8. 21 Light Remote Annunciator</td>
</tr>
<tr>
<td>9. Heavy duty air cleaner.</td>
</tr>
<tr>
<td>10. Main Line circuit breaker within enclosure.</td>
</tr>
<tr>
<td>11. Engine fluids.</td>
</tr>
<tr>
<td>12. 5 year Limited/Extended Limited warranty.</td>
</tr>
</tbody>
</table>

PART 3 EXECUTION

3.01 INSTALLATION

A. Connections: Make all connections to unit with flexible connections designed for the specific purpose.

B. Phase Relationship: Correctly phase emergency and normal service so that motor rotation will not reverse upon transfer from normal to emergency feeder.

3.02 FIELD QUALITY CONTROL

A. Preliminary System Test:

1. Preparation: Have the Company Field Advisor adjust the completed system (with the contract automatic transfer switch connected). Coordinate with automatic transfer switch test requirements. Operate it long enough to assure that it is performing properly.

2. Run a preliminary test for the purpose of:

   a. Determining whether the system is in a suitable condition to conduct an acceptance test.

   b. Checking and adjusting equipment.

   c. Training facility personnel.
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SECTION 263214 - STANDBY GENERATOR

B. System Acceptance Test:
   1. Preparation: Coordinate test with automatic transfer switch manufacturer and notify the Owner's Representative at least 3 working days prior to the test so arrangements can be made to have a Facility Representative witness the test.
   2. Make the following tests:
      a. Test each system function step by step as summarized under SYSTEM DESCRIPTION.
      b. Test starting system and battery capacity. Crank engine for the required time and number of consecutive starting attempts.
      c. Load test at unity (1.0) power factor and rated voltage in the following sequence (run each test segment continuously):
         1) One hour at half load.
         2) One hour at three-quarters load.
         3) Two hours at full load.
         4) During the test period take voltage, current, frequency and all engine instrument readings and record results at the beginning and end of test and at fifteen minute intervals during test.
      d. Measure fuel consumption during the full load test period.
   3. Supply an adjustable resistive load bank or other approved apparatus to load unit for variations of test loads.
   4. Supply equipment necessary for system adjustment and testing.
   5. Submit written report of test results signed by Company Field Advisor and the Owner's Representative. Mount a copy of the final report in a plexiglass enclosed frame assembly adjacent to the engine instrument panel.

END OF SECTION 263214
SECTION 263613 NON AUTOMATIC TRANSFER SWITCH

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Catalog sheets, specifications and installation instructions.

B. Contract Closeout Submittals:
   1. Operation and Maintenance Data: Deliver 2 copies, covering the installed products, to the Owner's Representative.

PART 2 PRODUCTS

2.01 MANUAL TRANSFER SWITCHES

THESE SWITCHES ARE SUITED FOR USE WHERE THE AVAILABLE FAULT CURRENT DOES NOT EXCEED 10,000 AMPERES RMS SYMMETRICAL. THESE SWITCHES ARE NOT SUITABLE FOR USE IN NFPA 110 LEVEL I APPLICATIONS, OR NFPA 99 APPLICATIONS. FOR HEAVIER DUTY AND HIGHER FAULT CURRENT RATED SWITCHES WHICH CAN MEET ALL CODES AND STANDARDS, USE AN ASCO STYLE NON-AUTOMATIC TRANSFER SWITCH SPECIFIED UNDER 2.02 & 2.03.

A. Challenger's Double Throw Safety Switches, Cutler-Hammer Inc.’s DT-K, General Electric Co.’s Type TC, Square D Co.’s Double Throw Safety Switches, or Westinghouse Electric Corp.’s XF/XU; having:

   ARTICLE 240-40 OF THE NEC REQUIRES A DISCONNECTING MEANS ON THE SUPPLY (LINE) SIDE OF ALL FUSES. FOR THIS REASON, A FUSIBLE DOUBLE THROW SWITCH MUST BE USED WITH TWO NON-FUSIBLE SINGLE THROW SWITCHES WHEN THE APPLICATION IS TO SWITCH FROM THE NORMAL TO AN ALTERNATE POWER SOURCE

3. NEMA 1 enclosure unless otherwise indicated on drawing.
NEMA 3R, 4 (STAINLESS STEEL), 12 AVAILABLE.

4. Minimum 240 V rating for 120 V, 208 V, or 240 V, circuits.
5. Minimum 600 V rating for 277 V, or 480 V circuits.
6. Solid neutral bus when neutral conductor is included with circuit and not indicated to be switched.
7. Ground bus when equipment grounding conductor is included with circuit.
8. Current rating and number of poles as indicated on drawings.

2.03 NON-AUTOMATIC TRANSFER SWITCHES, MANUALLY OPERATED
SECTION 263613  NON AUTOMATIC TRANSFER SWITCH

A. Automatic Switch Co.’s ASCO 486, or Russelectric Inc.’s Model RMT-MAN, with:
   1. Ratings as indicated on drawings.
   2. NEMA I enclosure.
   3. UL 1008 listing.
   5. Two door mounted identified pilot lights to indicate switch position.
   6. Auxiliary contact on main shaft (closed on normal).
   7. Auxiliary contact on main shaft (closed on emergency).

2.05 NAMEPLATES

A. General: Precision engrave letters and numbers with uniform margins, character size minimum 3/16 inch high.
   1. Phenolic: Two color laminated engravers stock, 1/16 inch minimum thickness, machine engraved to expose inner core color (white).
   2. Aluminum: Standard aluminum alloy plate stock, minimum .032 inches thick, engraved areas enamel filled or background enameled with natural aluminum engraved characters.
   3. Materials for Outdoor Applications: As recommended by nameplate manufacturer to suit environmental conditions.

PART 3 EXECUTION

3.01 INSTALLATION

A. Phase Relationship: Correctly phase emergency and normal service so that motor rotation will not reverse upon transfer from normal to emergency.

B. Identify each switch, indicating purpose or load served. Also include instructions on the nameplate indicating operating procedure for safe manual transfer.
   1. NEMA 1 Enclosures: Rivet or bolt nameplate to the cover.
   2. NEMA 3R, 4, 4X Enclosures: Attach nameplate to the cover using adhesive specifically designed for the purpose, or mount nameplate on wall or other conspicuous location adjacent to switch. Do not penetrate enclosure with fasteners.

END OF SECTION
PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. Diesel-Alternator Emergency System:

1.02 REFERENCES

A. UL 1008 listed, CSA certified.
B. NFPA 110.
C. NEMA Standard ICS2-447-AC Transfer Switches.
D. IEEE Standard 446.
E. ISO 9001.

1.03 TRANSFER SWITCH OPERATING DESCRIPTION

A. Design Criteria: One of the transfer switches is required to:
   1. Transmit signals to the diesel-alternator indicating when the unit should
      start and stop.

B. Description of Operation:
   1. The transfer switch monitors electrical parameters of normal and
      emergency feeders.
   2. In normal operating condition, the mechanism of the transfer switch is in
      the normal position and the diesel-alternator unit shut down. Sequence
      of transfer operation occurs as follows:
      a. The voltage on any phase of the normal feeder drops below 85
         percent of normal, initiating in the transfer switch an adjustable
         time delay (set at 2 seconds) to over-ride voltage fluctuations and
         momentary outages.
      b. At the end of the adjustable time delay, the diesel-alternator unit
         is signaled to automatically start.
      c. A voltage-frequency device in the transfer switch prevents
         transfer until the emergency feeder voltage rises to 90 percent of
         normal and the frequency reaches 95% nominal.
      d. The transfer switches transfer load to the emergency feeder.
      e. Complete transition from onset of normal feeder failure to
         emergency feeder transfer shall not exceed 10 seconds.
      f. When voltage on all phases of the normal feeder is restored to 90
         percent voltage, transfer from emergency to normal feeder is
SECTION 263623 - AUTOMATIC TRANSFER SWITCH

initiated with an adjustable time delay (5-25 minutes) in the transfer switch, and:

1) An auxiliary device (in-phase monitoring or programmed transition) in the transfer switch assures the normal and emergency power sources are synchronized, or induction motors have reached a safe transfer point before the transfer is made. Set the adjustable time delay for the programmed transition to 2 seconds or, if obtainable, the open circuit time constant (OCTC) of the largest motor to be on the emergency system.

2) Presignal adjustable transfer time delay contacts in the transfer switch provide a 15 second pre-transfer signal prior to transfer to allow elevator(s) to stop at the nearest floor and shut down.

g. When voltage on all phases of the normal feeder is restored to 90 percent voltage, transfer from emergency to normal feeder is initiated with an adjustable time delay (set at 30 minutes) in the transfer switch, and:

1) Not Used

2) Pre signal adjustable transfer time delay contacts in the transfer switch provide a 15 second pre-transfer signal prior to transfer to allow elevator(s) to stop at the nearest floor and shut down.

h. The transfer switch transfers load to the normal feeder at the end of the time delay.

i. The transfer switch transfers load to the normal feeder at the end of the time delay. Exception: If the emergency power source should fail and the normal power source has been restored, retransfer to the normal source of power shall be immediate, by passing the retransfer delay timer.

j. The presignal transfer time delay contacts reset immediately after the transfer has been completed.

k. The unit continues to run unloaded 5 minutes, after which the control equipment shuts down the engine and resets the system.

l. Permanently attached manual operating handle(s) allow for safe manual transfer under load. The switch operating speed is the same operated electrically or manually.

3. The transfer from Normal feed to the Emergency feed and vice versa shall be done in a step manner with 5 seconds in between the five Automatic Transfer Switches.

4. In test operating condition, the mechanism of the transfer switch is in the normal position and the diesel-alternator unit shut down. Upon activation of test switch, sequence of transfer operation occurs as follows:

a. At the end of an adjustable time delay (set at 2 seconds), the diesel-alternator unit is signaled to automatically start.
SECTION 263623 - AUTOMATIC TRANSFER SWITCH

b. A voltage-frequency device in the transfer switch prevents transfer until the emergency feeder voltage rises to 90 percent of normal and the proper electrical parameters are obtained.

c. Not Used

d. Pre signal adjustable transfer time delay contacts in the transfer switch provide a 15 second pre-transfer signal prior to transfer to allow elevator(s) to stop at the nearest floor and shut down.

e. The transfer switch transfers load to the emergency feeder.

f. The presignal transfer time delay contacts reset immediately after the transfer has been completed.

g. The transfer switch has provisions to test the diesel-alternator unit under load and unloaded.

h. Complete transition from onset of normal feeder failure to emergency feeder transfer shall not exceed 10 seconds.
   Exception: Elevator feeders (15 seconds).

i. When voltage on all phases of the normal feeder is restored to 90 percent voltage, transfer from emergency to normal feeder is initiated with an adjustable time delay (5-25 minutes) in the transfer switch, and:
   1) Not Used
   2) Pre signal adjustable transfer time delay contacts in the transfer switch provide a 15 second pre-transfer signal prior to transfer to allow elevator(s) to stop at the nearest floor and shut down.

j. When voltage on all phases of the normal feeder is restored to 90 percent voltage, transfer from emergency to normal feeder is initiated with an adjustable time delay (set at 30 minutes) in the transfer switch, and:
   1) Not Used
   2) Pre signal adjustable transfer time delay contacts in the transfer switch provide a 15 second pre-transfer signal prior to transfer to allow elevator(s) to stop at the nearest floor and shut down.

k. The transfer switch transfers load to the normal feeder at the end of the time delay.

l. The transfer switch transfers load to the normal feeder at the end of the time delay. Exception: If the emergency power source should fail and the normal power source has been restored, retransfer to the normal source of power shall be immediate, by passing the retransfer delay timer.

m. The pre signal transfer time delay contacts reset back to normal immediately after the transfer has been completed.

n. The unit continues to run unloaded 5 minutes, after which the control equipment shuts down the engine and resets the system.

1.04 SUBMITTALS
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SECTION 263623 - AUTOMATIC TRANSFER SWITCH

A. Waiver of Submittals: The "Waiver of Certain Submittal Requirements" does not apply to this Section.

B. Submittals Package: Submit the product data, shop drawings, and quality control submittals specified below at the same time as a package.

C. Shop Drawings:
   1. Installation details (coordination with connected equipment).

D. Product Data:
   1. Catalog sheets, specifications and installation instructions.
   2. Bill of materials.
   3. Detailed sequence of operations (format similar to TRANSFER SWITCH OPERATING DESCRIPTION).
   4. Company's data indicating maintenance schedule.
   5. Name, address and telephone number of nearest fully equipped service organization.

E. Quality Control Submittals:
   1. Design Data:
      a. Company's data indicating the switch will meet the requirements of 1.03 B.
      b. Certified data from the Company proving that the switch will meet the requirements of 1.03 A. Design Criteria.
   2. Company Field Advisor Data: Include:
      a. Name, business address and telephone number of Company Field Advisor secured for the required services.
      b. Certified statement from the Company listing the qualifications of the Company Field Advisor.
      c. Services and each product for which authorization is given by the Company, listed specifically for this project.
   3. Completed Installation List.

F. Contract Closeout Submittals:
   1. Operation and Maintenance Data: Deliver 2 copies, covering the installed product, to the Owner's Representative. Include name, address and telephone number of nearest fully equipped service organization.
   3. Certificate: Affidavit, signed by the Company Field Advisor and notarized, certifying that the switch operation with the related equipment meets the contract requirements and is operating properly.

1.05 QUALITY ASSURANCE

A. List of Completed Installations: If brand names other than those specified are proposed for use, furnish the name, address and telephone number of at least 5 comparable installations which can prove the proposed products have operated satisfactorily for 3 years.
SECTION 263623 - AUTOMATIC TRANSFER SWITCH

B. Company Field Advisor: Secure the services of a Company Field Advisor for a minimum of 8 working hours for the following:
   1. Render advice regarding installation and final adjustment of the switch.
   2. Witness final switch/system test and then certify with an affidavit that the switch is installed in accordance with the contract documents and is operating properly.
   3. Train facility personnel on the operation and maintenance of the switch (minimum of one 3 hour session).
   4. Explain available service programs to facility supervisory personnel for their consideration.

C. Service Availability: A fully equipped service organization capable of guaranteeing response time within 8 hours to service calls shall be available 24 hours a day, 7 days a week to service the completed Work.

1.06 MAINTENANCE

A. Spare Parts:
   1. Special tools if required for the regular maintenance and minor repairs of the switch.

PART 2 PRODUCTS

2.01 AUTOMATIC TRANSFER SWITCH

A. Automatic Switch Co.'s ASCO 940, Onan OT Series, Russelectric Inc.'s, Model RMT, or Zenith Controls Inc.'s ZTS, with:
   1. Double throw construction.
   2. Ratings as indicated on drawings.
   3. Accessories to perform the functions specified in TRANSFER SWITCH OPERATING DESCRIPTION.
   4. NEMA 1 enclosure.
   5. Electrically operated and mechanically held.
   6. Adjustable time delay, 0-6 seconds, to override momentary outages before initiating engine starting. Once engine is signaled to start it must run for at least the duration of the time delay before engine shut down.
   7. Adjustable time delay, 0-30 minutes, on retransfer to normal feeder with bypass of time delay in event of emergency feeder failure.
   8. Adjustable time delay, 0-10 minutes, on engine cool down.
   9. Adjustable time delay, 0-5 seconds, on transfer to emergency feeder.
   10. Test switch, momentary type, (permanent type are acceptable when accompanied by flashing red lights at the transfer switch and generator set to indicate switch is not in automatic mode), to simulate normal feeder failure (unit to start and transfer to emergency feeder).
   11. Not Used
   12. Pre signal transfer time delay contact closure (time adjustable, factory set at 15 seconds).
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13. Two identified pilot lights to indicate switch position (green normal, red emergency).
15. Auxiliary contact on main shaft (closed on normal).
16. Auxiliary contact on main shaft (closed on emergency).
17. Automatic exerciser for exercising the referenced diesel-alternator engine (no transfer to emergency feeder), minimum 30 minutes every 168 hours (7 days).
18. Automatic exerciser for exercising the referenced diesel-alternator engine (transfer to emergency feeder) minimum 30 minutes every 168 hours (7 days).
19. Equipment ground lug.
20. Not Used
21. Live parts shielded from personnel when door is open.

2.03 NAMEPLATES

A. General: Precision engrave letters and numbers with uniform margins, character size minimum 3/16 inch high.
   1. Phenolic: Two color laminated engravers stock, 1/16 inch minimum thickness, machine engraved to expose inner core color (white).
   2. Aluminum: Standard aluminum alloy plate stock, minimum .032 inches thick, engraved areas enamel filled or background enameled with natural aluminum engraved characters.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install all required engine starting signal circuitry from switches to engine start conductor junction box. Engine start signal shall be transmitted automatically upon loss of normal source voltage. The start signal shall prevent dry cranking of the generator by requiring the generator to reach proper output and run for at least the duration of the cooldown timer.

B. Install switch so that the maximum height above the floor to the center of the operating handle does not exceed 6'-0".

C. Identify switch, indicating designation, load served and normal feeder designation, by riveting or bolting nameplate to cover.

D. Install Remote Annunciator panel at location indicated.

3.02 FIELD QUALITY CONTROL

A. Preliminary Switch/System Test:

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1. Preparation: Have the Company Field Advisor adjust the switch for the completed system (including the related equipment) and then operate it long enough to assure that it is performing properly.

2. Run a preliminary test for the purpose of:
   a. Determining whether the switch is in a suitable condition to conduct an acceptance test.
   b. Checking and adjusting equipment.
   c. Training facility personnel.

B. Switch/System Acceptance Test:

1. Preparation: Coordinate test with related equipment manufacturer and notify the Owner's Representative at least 3 working days prior to the test so arrangements can be made to have a Facility Representative witness the test.

2. Make the following tests:
   a. Test each switch function step by step as summarized under TRANSFER SWITCH OPERATING DESCRIPTION.

3. Submit written report of test results signed by Company Field Advisor and the Owner's Representative. Give a copy of the final report to the Owner's Representative.

END OF SECTION
PART 1 GENERAL

1.01 SUBMITTALS

A. Waiver of Submittals: The “Waiver of Certain Submittals Requirements” in Section 013300 does not apply to this Section.

B. Product Data: Catalog sheets, specifications and installation instructions.

C. Samples: One of each product if different from Company or catalog number specified.

1.02 QUALITY ASSURANCE

A. List of Installations: If brand names other than those specified are proposed for use, furnish the name, address, and telephone number of at least 5 comparable installations which can prove the proposed products have operated satisfactorily for one year.

1.03 MAINTENANCE

A. Special Tools: Furnish 2 tools to remove and install fasteners on fixtures equipped with vandal resistant fasteners.

PART 2 PRODUCTS

2.01 EXIT LIGHT FIXTURES

A. Type XL: Exitronix's Series 600, Siltron Illumination Inc.’s VX series, Cooper Lighting Company's EXL series or equivalent, having:

1. Bronze finish.
2. Directional arrows where indicated on drawings.
3. Red light emitting diodes (L.E.D.s) with protective polycarbonate clear lens to protect L.E.D.s. Fixtures shall not contain optical or light diffusing panels.
4. Vandal resistant fasteners.
5. Mounting designed for:
   XL1 - Wall, recessed.
   XL2 - Wall, surface.
   XL3 - Wall, extended (end mount), single face.
   XL4 - Ceiling, single face.
   XL5 - Stem (to mount fixture 8 feet AFF), single face.
   XL6 - Wall, extended (end mount), double face.
   XL7 - Ceiling, double face.
PART 3 EXECUTION

3.01 INSTALLATION

A. Install the Work of this Section in accordance with the manufacturer's printed instructions.

END OF SECTION
SECTION 283101 — PROTECTED PREMISES FIRE ALARM SYSTEM

PART 1 GENERAL

1.02 REFERENCES

A. Underwriters Laboratories Inc.


1.03 DEFINITIONS

A. Initiating Device Circuit: A circuit to which automatic or manual initiating devices are connected where the signal received does not identify the individual device operated. Example:
   1. Circuits from FACP to non-addressable signal initiating devices.

B. Notification Appliance Circuit: A circuit or path directly connected to a notification appliance. Example:
   1. Circuits from FACP to notification appliances.

C. Signaling Line Circuit: A circuit or path between any combination of circuit interfaces, control units, or transmitters over which multiple system input signals or output signals, or both are carried. Examples:
   1. Circuits from FACP to addressable devices.

D. Operating Mode:
   1. Private Mode:
      a. Audible and visible signaling only to those persons directly concerned with the implementation and direction of emergency action initiation and procedure in the area protected by the fire alarm system, and:
      b. Audible and visible signaling only to those persons within special designated areas where private mode operation is specified to be applicable.
   2. Public Mode: Audible and visible signaling to occupants or inhabitants of the area protected by the fire alarm system.
1.04 SYSTEM DESCRIPTION

1. In Building With One Fire Alarm Control Panel: Changes in the status of monitored points are indicated at the microprocessor based main fire alarm control panel (MFACP).
   a. The MFACP continually monitors the communications and data processing cycles of the micro-processor. Upon MFACP failure, an audible and visible alarm activates at the MFACP.

2. Smoke detectors and smoke sensors operate in conjunction with the systems' alarm verification program.
   a. The alarm verification operation is selectable by zone for smoke detectors and by individual devices for smoke sensors.
   b. The activation of any smoke detector within its zone initiates the alarm verification program.
      1) The panel resets the activated detector and waits for a second alarm activation. If within one minute a second alarm is reported from any detector within the zone, the system alarms. If no second alarm within one minute, the system resumes normal operation.
   c. The system can display the number of times (tally) a smoke detector zone or smoke sensor has gone into a verification mode. A trouble condition occurs when the tally reaches a pre-programmed number.

3. Smoke sensors act as intelligent and addressable devices. The smoke sensor converts the condition of its smoke sensing chamber to an analog value. This analog value is digitized and transmitted to the FACP(s).
   a. Actual smoke density and temperature measurements are referenced from average sample measurements and are compared to programmable values of threshold sensitivity.
   b. Sensor “dirty” and “excessively dirty” trouble conditions are reported automatically through a maintenance advisory and alert program procedure.
   c. The system continuously performs an automatic self-test routine on each sensor that checks sensor electronics to ensure the accuracy of the values being transmitted to the FACP(s). Sensors that fail are identified and indicate a trouble condition.
   d. System automatically performs NFPA 72 sensor sensitivity testing by:
      1) Frequent routine individual sensor alarm simulation testing.
      2) Trouble signal when sensor is outside its acceptable sensitivity range.

4. System individually identifies each addressable initiating device and other addressable monitor functions using multiplexing techniques.

5. System is capable of individually operating each alarm notification appliance, and other control functions, using multiplexing techniques.

6. Alarms are processed by the system at 3 levels of priority:
a. Fire alarms, supervisory, and trouble signals take precedence in that respective order of priority, over all other signals.

b. Other alarms that require interaction by the attendant have the second level of priority.

c. Monitored points that do not require interaction by the attendant are the third level of priority.

7. Alarms, supervisory signals, and trouble signals are distinctively and descriptively annunciated.
   a. Fire alarm signals are distinctive in sound from other signals, and this sound is not used for any other purpose.
   b. Supervisory signals are distinctive in sound from other signals.
      1) System differentiates between supervisory device activation and trouble (wiring faults) on independent supervisory service initiating circuits.
   c. Trouble signals are indicated by distinctive audible signals. Exception: The same sound may be used for both supervisory signal and trouble signal if distinction is made between signals by visible annunciation.

8. Switches for silencing audible trouble and supervisory signals transfers the audible signal to an identified lamp or other visible indicator adjacent to the switches. The visible indication persists until the condition has been corrected. The audible signal sounds when the switch is in its silence position and no trouble or supervisory condition exists.
   a. Trouble silencing switch does not prevent sounding of supervisory signal. Subsequent supervisory signals from other zones causes the supervisory signal to resound. A switch left in the silence position where there is no supervisory off-normal signal operates a visible signal silence indicator and causes the trouble signal to sound until the switch is returned to normal.
   b. A silenced audible trouble signal resounds at programmable time intervals (every 24 hours or less) as a reminder that the trouble condition has not been corrected. Re-sounded signal is retransmitted to all locations required of the original trouble signal.

9. System visible and audible trouble signals and supervisory signals and visible indication of their restoration is indicated at the MFACP.
   a. Monitoring of ground fault conditions indicate a ground fault trouble condition at the MFACP.

10. Access to the system functions are controlled thru at least 3 levels of access security to prevent program modifications or use by unauthorized personnel:
   a. At the lowest level of access the system automatically receives, displays and prints alarms, and performs control-by-event life safety functions. The attendant has minimum access to the system functions:
      1) Alarm acknowledge.
      2) Print alarm summary.
      3) Silence alarms.
4) Perform other basic system functions that require interaction by the attendant (cannot change program parameters).

b. At mid-level of access, the attendant may change user programmable parameters and print all summaries.

c. At the highest level of access, programs may be modified by the system manager (life safety control-by-event programs may be field or factory modified).

d. System access functions (log on, log off, access level authority) are displayed and printed with date, time, and person's name.

11. Summary reports are displayed and printed at the MFACP upon appropriate function command. Active control points are identified by an assigned message. Spare control points are identified by a point number. The summary reports can be interrupted and terminated and the system returned to normal operation by a manual reset control or automatically if the system senses a change of status signal. The summary reports include:

a. Current Alarm, Trouble, and Supervisory Conditions: Lists all points not in normal state (print and display).

b. Alarm historical log report.

c. Trouble and supervisory historical log report.

d. All Points: Lists every point in the system and current status of the point (print only, display not required).

e. Control by Event Programs: Lists data for event initiated programs (print only, display not required).

f. Control by Time Programs: Lists data for time initiated programs (print only, display not required).

g. Diagnostics:

1) Alarm verification cycles initiated by a smoke detector zone or individual smoke sensors.

2) Smoke sensor service report: Device number, device type, custom label, presently selected alarm set point information, present average value, present value, peak observed values, service status.

3) Smoke sensor status report: Device number, device type, custom label, present sensitivity in % for smoke sensors and in degrees for temperature sensors, present status, and sensor range (normal, almost dirty, dirty).

4) Devices that fail automatic tests.

5) Walk test reports.

12. Life safety control-by-event functions are retained in a non-volatile programmable memory and are not alterable through normal operation of the system.

a. The life safety control-by-event control points may be manually operated at any time by authorized personnel thru appropriate system commands.

13. User programmable control-by-event functions may be programmed thru appropriate system commands to automatically activate any user.
programmable control point upon a status change from any programmable monitor point.

a. The user programmable control-by-event control points may be manually operated at any time by the authorized personnel thru appropriate system commands.

14. User programmable parameters for automatic time-initiated functions (start/stop, on/off, secure/access, etc.) may be added, omitted and altered thru appropriate system commands.

a. The time-initiated user programmable control points may be manually operated at any time by authorized personnel thru appropriate system command.

MAFCP.

1. The MFACP displays the point and type of alarm condition. Addressable devices are individually identified.

2. The MFACP prints the assigned message with date and time on the printer for the point in alarm. Assigned messages, date and time are also printed for the control-by-event functions activated by the point in alarm.

3. The fire department is automatically called.

   1) Supervision of wiring between MFACP and remote station indicates trouble conditions at the MFACP.

   2) For system test, a switch in the MFACP enables an authorized person to prevent a signal transmission to the CENTRAL STATION OPERATING COMPANY. When disconnected, a system trouble condition is indicated, also, a separate lamp illuminates indicating the disconnected mode.

4. An authorized person at the MFACP presses the acknowledge button which silences its audible alarm and causes a print-out and display of the assigned message for the point in alarm with date, time and an acknowledge prefix.

5. A procedure sign located at the MFACP instructs personnel on procedure to be followed in the event of a fire.

   a. Visible signal illuminates drawing attention to the procedure sign.

6. Audible alarm notification appliances sound a public mode ANSI S3.41 evacuation signal in the alarm signal initiation zone and other zones in accordance with the buildings fire evacuation plan. Evacuation signal is synchronized within each notification zone.

7. Alarm signal does not sound in stairwells or elevators.

   a. Public mode flash rate does not exceed 2 flashes per second, nor less than one flash every second throughout the listed voltage range of the appliance.

      1) The maximum pulse duration is 0.2 seconds with a maximum duty cycle of 40 percent. The pulse duration
is defined as the time interval between initial and final
points of 10 percent of maximum signal.

G  An authorized person manually resets the system at the MFACP at conclusion of
alarm condition. When an alarm condition is corrected, a print-out and display
occurs at the MFACP stating the assigned reset message for the point in alarm
with the date, time and reset suffix.
1. Manually resetting the system requires only one operation.
2. Resetting the system does not disturb system control points or functions.

H  Primary and Secondary Power Supplies:
1. Failure of primary power supplies automatically transfers the affected
   portions of the system to the secondary power supplies:
   and supervisory functions of the system are transferred without loss to
   the secondary power supplies.
   a) Ground fault indication, and battery trouble conditions,
   are not required to transfer to the secondary power
   supplies.
   b) System power requirements are transferred to the secondary
      power supplies except door hold open devices, door lock
      releases, controls for selected HVAC equipment, fire dampers,
      and smoke dampers.
   c) Audible and visible indication of alarm condition when operating
      system on secondary power supply is:
      a) Display and printing of assigned message on printer at
         the MFACP.
      b) The secondary supply, in addition to the battery standby power
         supplies, also includes connection to an automatic starting
         diesel-alternator system that will operate the system for 24 hours.
3. Upon restoration of primary power supply, the system reverts to
   normal operation without loss, attendant intervention, or manual re-start
   procedures.

I.  Monitoring Integrity of Installation Conductors and Other Signaling Channels:
1. Performance of Signaling Line Circuits:
   a) Circuits from MFACP to ICUs: NFPA 72, Class A, Style 7. A
      print-out and display occurs to identify trouble conditions.
   b) Circuits from MFACP and ICUs to Addressable Devices:
      NFPA 72, Class B, Style 4. A print-out and display occurs to
      identify trouble conditions.
2. Performance of Initiating Device Circuits:
   a) Circuits from MFACP and ICUs to Initiating Devices (Fire
      Alarm, Sprinkler): NFPA 72, Class B, Style C. A print-out and
      display occurs to identify trouble conditions.
3. Performance of Notification Appliance Circuits:
   a) Circuits from MFACP and ICUs to Notification Appliances:
      NFPA 72, Class B, Style Y. A print-out and display occurs to
      identify trouble conditions.
4. Monitoring Integrity of Power Supplies:
a. Primary and secondary power supplies are monitored for presence of voltage at the point of connection to the system. Failure of either supply results in a system trouble condition.
b. An audible and visible alarm, display and print-out indicates failure of the primary (main) power supplies, within the system, at the MFACP.
c. The system also monitors the secondary (battery) power supplies for battery trouble conditions (low voltage/no batteries, high current and charging current).

J. Interconnection of Fire Safety Control Functions:
1. A listed relay or other listed appliance connected to the fire alarm system is used to initiate control of protected premises fire safety functions and is located within 3 feet of the controlled circuit or appliance.
   a. The installation wiring between the fire alarm control unit and the relay or other appliance is monitored for integrity.
   b. Relays and appliances that operate on loss of power are considered self-monitoring for integrity.
2. The method(s) of interconnection between the fire alarm system and controlled electrical and mechanical systems is monitored for integrity and is achieved by one of the following recognized means:
   a. Electrical contacts listed for the connected load.
   b. Listed digital data interfaces such as serial communication parts and gateways.
   c. Other listed methods.
3. Fire safety functions do not interfere with other operations of the fire alarm system.
   a. Fire safety function control devices and gateways are listed as compatible with the fire alarm control unit so as to prevent interference with control unit operation caused by controlled devices and to ensure transmission of data to operate the controlled devices.
4. Controls provided specifically for the purpose of manually overriding automatic fire safety functions provide visible indication of the status of the associated control circuits.
   a. Status indicators for emergency equipment and fire safety functions are arranged to reflect the actual status of the associated equipment or function.
5. Where the fire alarm system is a component of a life safety network, and it communicates data to other systems providing life safety functions:
   a. The path for communicating data is monitored for integrity, including the physical communication media and the ability to maintain intelligible communications.
   b. Data received from the network does not affect the operation of the fire alarm system in any way other than to display the status of life safety network components.
   c. Where non-fire alarm systems are interconnected to the fire alarm system using a network or other digital communication
The system operates in conjunction with carbon dioxide automatic fire suppression systems (AFSS's).
1. Alarm and trouble conditions in the AFSS's are indicated at the MFACP to which the AFSS's are connected.
2. A supervisory signal at the MFACP indicates off-normal condition and its restoration to normal for each AFSS (Each AFSS is separately reset at its own control panel.).
3. Where alarm condition is initiated by a cooking operation AFSS, all sources of fuel and electric power to the equipment associated with the AFSS are automatically shut off.
4. Operation of a disconnect switch which allows the system to be tested without activating the AFSS causes a trouble condition to be indicated at the FCS.

The system operates in conjunction with existing sub-systems (fire alarm systems).
1. Alarm conditions in the sub-systems are indicated at the as individual zones.
2. Trouble conditions are indicated at the MFACP as a common trouble for each sub-system.
3. The MFACP controls existing alarm notification appliances.

In addition to the specific supervision functions of each fire suppression system, each system also indicates trouble condition at the MFACP whenever components of the system are tampered with, opened or removed, including:

a. Removal of covers from junction boxes on the outside of buildings.

b. Valves installed in the connection between a signal attachment and the fire suppression system to which it is attached.

c. Operation of disconnect switches that are used to allow system testing without activating the fire suppression system.

Waiver of Submittals: The “Waiver of Certain Submittal Requirements” in Section 013300 does not apply to this Section.

Preliminary Submittal: Existing system test report.

Submit the shop drawings, product data, and quality control submittals specified below at the same time as a package.
1. **Company Field Advisor Letter:** With the submittals package include a letter from the Company Field Advisor stating that he/she has reviewed the Submittals Package for accuracy and completeness, and approves all materials and installation methods included in the Submittals Package.

**D. Shop Drawings:**

1. **Composite wiring and/or schematic diagrams of the complete system as proposed to be installed (standard diagrams will not be acceptable).**
   a. Indicate circuits which are power-limited if power-limited wiring is proposed for use.
   b. For 2-hour fire rated cable assemblies show proposed routes and installation details (include UL classification data, listing and system number).
   c. Include transient surge and lightning protection grounding details for signaling line circuits, initiating device circuits, and ac power conductors entering and leaving each fire alarm control panel.

2. **Interconnection details between new system and existing sub-systems.**

**E. Product Data:**

1. **Catalog sheets, specifications and installation instructions.**
2. **Bill of materials. Refer to Fire Alarm Equipment Schedule Drawing FA001.00**
3. Detailed description of system operation. Format similar to SYSTEM DESCRIPTION.
4. Sample procedure, programming and print-out for alarm, acknowledgment, and system reset.
5. Total electrical load of the complete system in supervisory and alarm conditions.
   a. Include for each system component that utilizes batteries the battery ampere-hour capacity recommended for each component by the Company producing the system, for the specified duration.
6. Statement from the Company producing the system, for each size and type of single conductor and multiconductor cable proposed for use, indicating that the electrical characteristics meet the requirements of the Company.
7. Data from the Company furnishing the products, proving that detection devices that receive their power from the initiating device circuit or a signaling line circuit of a fire alarm control unit are UL listed for use with the control unit.
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a. Submit copy of the control unit “Installation Manual Wiring Diagrams” that were a part of the UL “UOJZ” approval process showing that the proposed products, circuits, and wiring diagrams are UL listed “Control Units System (UOJZ)” for use with the control panel.
b. Submit data proving that the software and firmware is listed for use with the control panel.
c. Submit data proving that the initiating devices are listed for the intended application.
d. Submit data proving that the method(s) of monitoring the connection between the fire alarm system and controlled electrical and mechanical systems for integrity are listed for the purpose.

8. Detailed description of procedure proposed to test individual initiating devices.
   a. Include product information pertaining to the test equipment that will be used to perform the tests.
   b. Include certified statement that the proposed test method meets the test requirements of NFPA 72 and UL 268 (cite reference to the applicable NFPA and UL paragraphs).

9. Name, address and telephone number of nearest fully equipped service organization.
   a. Include list of service technicians who are NICET Level II or higher Fire Alarm Systems certified.

F. Quality Control Submittals:
      a. Also include copy of identification card issued by the Licensee for each person who will be performing the Work.
   2. Company Field Advisor Data: Include:
      a. Name, business address and telephone number of Company Field Advisor secured for the required services.
      b. Certified statement from the Company listing the qualifications of the Company Field Advisor.
      c. Copy of NICET Letter of Approval indicating Level III or higher Fire Alarm Systems certification.
      d. Services and each product for which authorization is given by the Company, listed specifically for this project.

G. Contract Closeout Submittals:
   1. System acceptance test report.
   2. Certificates:
      a. Affidavit, signed by the Company Field Advisor and notarized, certifying that the system meets the contract requirements and is operating properly.
      b. NFPA Record of Completion (NFPA 72 Figure 1-6.2.1).
   3. Operation and Maintenance Data:
      a. Deliver 2 copies, covering the installed products, to the Owner's Representative. Include:
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1) Operation and maintenance data for each product.
2) Complete point to point wiring diagrams of entire system as installed. Identify all conductors and show all terminations and splices. (Identification shall correspond to markers installed on each conductor.)
3) Name, address, and telephone number of nearest fully equipped service organization.

1.06 QUALITY ASSURANCE

A. Equipment Qualifications For Products Other Than Those Specified:
   1. At the time of submission provide written notice to the Owner of the intent to propose an “or equal” for products other than those specified. Make the “or equal” submission in a timely manner to allow the Owner sufficient time to review the proposed product, perform inspections and witness test demonstrations.
   2. If products other than those specified are proposed for use furnish the name, address, and telephone numbers of at least 5 comparable installations that can prove the proposed products have performed satisfactorily for 3 years. Certify in writing that the owners of the 5 comparable installations will allow inspection of their installation by the Owner's Representative and the Company Field Advisor.
      a. Make arrangements with the owners of 2 installations (selected by the Owner) for inspection by the Company Field Advisor for the proposed products to be present. Notify the Owner a minimum of 3 weeks prior to the availability of the installations for the inspection, and provide at least one alternative date for each inspection.
      b. Only references from the actual owner or owner's representative (Security Supervisor, Maintenance Supervisor, etc.) will be accepted. References from dealers, system installers or others, who are not the actual owners of the proposed products, are not acceptable.
         1) Verify the accuracy of all references submitted prior to submission and certify in writing that the accuracy of the information has been confirmed.
   3. The product manufacturer shall have test facilities available that can demonstrate that the proposed products meet the contract requirements.
      a. Make arrangements with the test facility for the Owner's Representative to witness test demonstrations. Also obtain the services of the Company Field Advisor for the proposed product to be present at the test facility. Notify the Owner a minimum of 3 weeks prior to the availability of the test facility, and provide at least one alternative date for the testing.
   4. Provide written certification from the manufacturer that the proposed products are compatible for use with all other equipment proposed for use
for this system and meet all contract requirements.

B. UL Listing: The system shall be listed in the UL Fire Protection Equipment Directory under product category “Control Units System (UOJZ)”.

C. Test Facility: The Company producing the system shall have test facilities available that can demonstrate that the proposed system meets contract requirements.

D. Company Field Advisor: Company Field Advisor shall be National Institute for Certification in Engineering Technologies (NICET) certified as Level III or higher Fire Alarm Protection/Fire Alarm Systems Engineering Technician.
   1. Secure the services of a Company Field Advisor for a minimum of 40 working hours at the contract site for the following:
      a. Render advice regarding installation and final adjustment of the system.
      b. Assist in initial programming of the system.
      c. Render advice on the suitability of each signal initiating device for its particular application.
      d. Witness final system test and then certify with an affidavit that the system is installed in accordance with the contract documents and is operating properly.
      e. Train facility personnel on the operation, programming and maintenance of the system (minimum of two 3-hour sessions).
      f. Explain available service programs to facility supervisory personnel for their consideration.

1.07 MAINTENANCE

A. Service Availability: A fully equipped service organization capable of guaranteeing response time within 8 hours to service calls shall be available 24 hours a day, 7 days a week to service the completed Work.
   1. Service organization personnel shall include service technicians who are National Institute for Certification in Engineering Technologies (NICET) certified as Level II or higher Fire Alarm Protection Fire Alarm System Engineering Technician.

B. Spare Parts:
   1. 50 percent spare of each type fuse.
   2. 30 percent spare of each type lamp (except LED type).
   3. 10 percent spare of each type initiating device.
   4. 10 percent spare of each type notification appliance.
   5. 10 percent spare of each type protective device.

PART 2 PRODUCTS
2.01 MAIN FIRE ALARM CONTROL PANEL

1. Permanently record the installed software and firmware version number within each fire alarm control panel.
2. 14 gage metal cabinet. Size as recommended by the Company producing the system.
   a. Control switches, inaccessible behind hinged and locked door.
   b. Alarm display and lamps visible when door is closed.
3. Do not load visible alarm appliance circuit outputs to more than 70 percent of the FACP’s power limited rating.
4. Input circuits suitable for operation on 120Vac primary (main) power supply and 24 Vdc secondary (battery) power supply.
5. 24 Vdc Secondary (Battery) Power Supplies: Sealed, lead-acid gelled electrolyte or maintenance free lead-calcium batteries:
   a. Ampere-hour capacity to operate under load conditions specified in SYSTEM DESCRIPTION.
   b. Battery charger with charging characteristics as recommended by battery manufacturer.
   c. Meters for battery voltage and charging current.
   d. Batteries and charger integrally mounted or separate cabinet mounted as recommended by the company producing the system.
6. Transient surge and lightning protection for signaling line circuits, initiating device circuits, and ac power conductors entering and leaving each fire alarm control panel: Edwards IO1000R or approved equal
   a. City Connection Circuit Wiring (reverse polarity type): UL listed to Standard 497A
   b. Signaling Line Circuits and Initiating Device Circuits: UL listed to Standard 497B

2.02 INITIATING DEVICES

A. General:
   1. Fire detection devices that receive their power from the initiating device circuit or a signaling line circuit of a fire alarm control unit shall be listed for use with the control unit.
   2. Where individually identifiable (addressable) devices are required, but not available from the Company producing the system, either:
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a. Use non-addressable devices and individually wire each device to the FACP's as separate monitor points, making each non-addressable device individually identifiable, or:
b. Employ remote addressable network modules to make each non-addressable device individually addressable.

B. Ceiling Mounted Detecting devices (Non-Addressable, Non-Intelligent):
   1. General:
      a. Heat detectors, ionization type smoke detectors, and photoelectric type smoke detectors shall have common mounting base that accommodates interchanging of the different type detectors.
   2. Smoke Detectors:
      Refer to Dwg. FA-001 and manufacturer's cut sheet.
   3. Heat Detectors:
      a. Fixed Temperature:
         1) 135 degrees F
      b. Combination Rate-of-Rise/Fixed Temperature:
         1) 135 degrees F

C. Ceiling Mounted Sensors (Intelligent, Addressable, Analog):
   1. General:
      a. Heat sensors, ionization smoke sensors, and photoelectric smoke sensors shall have common mounting base that accommodates interchanging of the different type sensors.
   2. Smoke Sensors:
      a. Ionization Type: Notifier's FSI-751
      b. Photoelectric Type: Notifier's FSP-751
         1) Photoelectric type smoke sensor shall have initial sensitivity level of 3.2.
      c. Multi-Sensor Type:
         1) Photoelectric/Heat: Notifier's FSP-751T
   3. Heat Sensors:
      a. 135 degrees F (fixed temperature)
      b. 135 degrees F (fixed temperature/R.O.R.)

I. Manual Fire Alarm Boxes:
   2. Addressable:
      a. Single Action Pull Type: Notifier's, NBG-12LX.

2.03 NOTIFICATION APPLIANCES
NY Rising – Governor’s Office of Storm Recovery  
GOSR Work Order Number: NTF-1-DES  
Edgewater Park Volunteer Fire Department — Storm Hardening and Abatement  
SECTION 283101 — PROTECTED PREMISES FIRE ALARM SYSTEMS

A. General:  
1. Provide UL 464 listed audible signal appliances:  
   a. Classified “Public” to suit application.  
   b. Marked “F.A. Service” to suit application.  
2. Provide UL listed visible signal devices:  
   b. For public mode applications, UL 1971 “Signaling Devices for the Hearing Impaired”.  
   c. For wall mounting or ceiling mounting to suit application.  

1. Type AV: Notifier’s SpectrAlert Series,  
   a. Xenon flashtube strobe:  
      1) AV-15: 15 candela.  
      2) AV-75: 75 candela.  
      3) AV-110: 110 candela.  
   b. Clear lens having FIRE imprinted thereon in red letters, or clear lens with red base having FIRE imprinted thereon in white letters.  
   c. Audible alarm notification appliance as indicated on the drawing.  
      1) Horn.  
   d. Surface or flush wall mounted as indicated on the Drawings.  

C. Visible Appliances - Wall Mounted:  
1. Type V:  
   a. Xenon flashtube strobe:  
      1) V-15: 15 candela.  
      2) V-75: 75 candela.  
      3) V110: 110 candela.  
   b. Clear lens having FIRE imprinted thereon in red letters, or clear lens with red base having FIRE imprinted thereon in white letters.  
   c. Surface or flush wall mounted as indicated on the Drawings.  

D. Audible Appliances - Wall Mounted:  
1. Horns:  
   a. Type H:  
      1) Surface or flush wall mounted as indicated on the Drawings.  
   b. Type H-1:  
      1) Surface wall mounted.  
      2) Selectable multiple tone signals.  
      3) Suitable for damp and wet locations.  

2.05 DIGITAL ALARM COMMUNICATOR SYSTEMS
A. Digital Alarm Communicator Transmitter (DACT):
   1. Input circuit suitable for operation on 24 Vdc primary and secondary power supplies.
      a. DACT may be separately wall mounted or an integral module in a fire alarm control panel.
   2. UL-864 listing.
   3. NFPA 72 compliance, operation with two telephone lines.
   4. Compatible with central supervising station DACR and regulations.

B. Digital Alarm Communicator Receiver (DACR).
   1. The central supervising station DACR is an Ademco Model 685, located at
   2. The contact person is __________

2.09 PROTECTIVE DEVICES

A. Pull Station Protective Shield: Clear Lexan shield and red frame covering manual pull station. When shield is lifted a battery powered warning horn is activated. The horn is silenced by lowering and realigning the shield.
   1. Edwards’ or approved equal STI Series Stopper II, Notifier's STI Stopper II, Safety Technology International Inc.’s STI Stopper II, or Simplex's 2099 Series (STI) including:
      a. Batteries.
      b. Weatherproof shield for damp and wet locations.
      c. Mounting accessories.
   2. For Smoke and Heat Detection Devices:

2.11 POWER-LIMITED FIRE ALARM CIRCUIT CONDUCTORS

A. All electrical characteristics shall meet the requirements of the Company producing the system (conductor to conductor capacitance, dc resistance, velocity of propagation etc.).

B. Multiconductor Cables NFPA 70 type FPLP, FPLR, FPL:
   1. Insulated copper conductors.
   2. Conductors twisted, shielded and jacketed as recommended by the Company producing the system.
   3. Voltage rating of not less than 300 volts (Voltage rating not marked on cable except where cable has multiple listings and voltage marking is required for one or more of the listings).

C. Other types of cables may be used in accordance with NFPA 70 Table 760-61 “Cable Uses and Permitted Substitutions”, as approved, if listed as being suitable for the purpose.
2.12 NONPOWER-LIMITED FIRE ALARM CIRCUIT CONDUCTORS

A. All electrical characteristics shall meet the requirements of the Company producing the system (conductor to conductor capacitance, dc resistance, velocity of propagation, etc.).

B. Conductors twisted, shielded and jacketed as recommended by the Company producing the system.

C. Single Conductors:
   1. No. 18 and No. 16 AWG: Insulated copper conductors suitable for 600 volts, N.E.C. types KF-2, KFF-2, PAFF, PTFF, PF, PFF, PGF, PGFF, RFH-2, RFHH-2, RFHH-3, SF-2, SFF-2, TF, TFF, TFN, TFFN, ZF, ZFF.
   2. Larger Than No. 16 AWG: Insulated copper conductors suitable for 600 volts, in compliance with NFPA 70 Article 310.
   3. Conductors with other types and thickness of insulation may be used if listed for nonpower-limited fire alarm circuit use.

D. Multiconductor Cables NFPA 70 Types NPLFP, NPLFR, NPLF:
   1. Conductors:
      a. Conductor Sizes No. 18 and No. 16 AWG: Insulated copper conductors rated 600 volts, NFPA 70 types KF-2, KFF-2, PAFF, PTFF, PF, PFF, PGF, PGFF, RFH-2, RFHH-2, RFHH-3, SF-2, SFF-2, TF, TFF, TFN, TFFN, ZF, ZFF.
      b. No. 14 AWG and Larger: Insulated copper conductors suitable for 600 volts, one of the types listed in NFPA 70 Table 402-3 or one that is identified for nonpower-limited fire alarm circuit use.
   2. Cable Listing and Marking: NPLFP, NPLFR, and NPLF marked to suit listings and may be marked with a maximum usage voltage rating of 150 volts.

2.13 MC CABLE

A. Metal-Clad Cable, NFPA 70 Type MC:
   1. All electrical characteristics shall meet the requirements of the Company producing the system (conductor to conductor capacitance, dc resistance, velocity of propagation, etc.).
   2. Conductors twisted, shielded and jacketed as recommended by the Company producing the system.
   3. Interlocked flexible galvanized steel armor sheath conforming to UL requirements for Type MC metal clad cable.
   4. Insulated copper conductors suitable for 600 volts:
      a. No. 18 and No. 16 AWG: A type listed in NFPA 70 Table 402-3 with a maximum operating temperature not less than 90°C, or types KF-2, KFF-2, PAF, PAFF, PTFF, PF, PFF, PGF, PGFF, PTF, PTF, SF-2, SFF-2, ZF, ZFF.
2.14 2-HOUR FIRE RATED CABLE ASSEMBLIES

A. Fire Alarm Circuit Integrity (CI) Cable: Cables identified as meeting the requirements for circuit integrity shall have the additional classification using the suffix “CI”. Examples: FPLP-CI, FPLR-CI, FPL-CI, NPLFP-CI, NPLFR-CI, NPLP-CI.
   1. Cables shall have a minimum 2-hour fire resistance rating for the cable when tested in accordance with the Standard for Tests of Fire Resistive Cables-UL 2196.

B. MI Cable: AFC Cable Systems' MI cable, or BICC/Pyrotenax Mineral Insulated System 1850 Pyrotenax Cable:
   1. All electrical characteristics shall meet the requirements of the Company producing the system (conductor to conductor capacitance, dc resistance, velocity of propagation, etc.).
   2. Solid copper conductors, twisted, shielded as recommended by the Company producing the system.
   3. Seamless copper sheath.
   4. Two hour fire resistive rating UL system classified, listed in the UL Fire Resistance Directory product category Electrical Circuit Protective Systems (FHIT) and Fire Resistive Cables (FHJR).

C. Other 2-hour Fire Resistive Cables: Listed in UL Buildings Materials Directory, product category Electrical Circuit Protective Systems (FHIT), and Fire Resistive Cables (FHJR):
   1. Type MC/CI: Rockbestos—Surprenant Cable Corp.’s VITALink MC Circuit Integrity Cable (FHIT System No. 17).
      a. PVC jacketing (where shown on drawings).
   2. Type FPL/EMT: Rockbestos—Surprenant Cable Corp.’s VITALink FA UL Listed Type FPL installed within ½” EMT steel conduit (FHIT System No. 22).

2.15 SIGNS, LABELS, MARKERS, AND NAMEPLATES

A. Procedure Sign: Card holder with aluminum or stainless steel frame, plexiglass front and sheet aluminum card backing plate. Minimum size card 8 x 10 inches. For each procedure sign furnish 1 blank card in holder and 5 spare blank cards suitable for typing future procedures thereon.
D. Floor Locator: Flip type bound file, indexed with tabs and equipped with 8-1/2 x 11 inch (minimum) plan of each floor in building. Show location of all major equipment associated with the system. Also show location of each manual fire alarm box. Enclose each floor plan in clear plastic envelope so that floor plans can be removed and updated.

E. Wiring Diagram: One line diagram showing interconnection of all major components associated with the system. Encase with aluminum or stainless steel frame, and plexiglass front.

F. Nameplates: Precision engrave letters and numbers with uniform margins, character size minimum 3/16 inch high.
   1. Phenolic: Two color laminated engraver's stock, 1/16 inch minimum thickness, machine engraved to expose inner core color (white).
   2. Aluminum: Standard aluminum alloy plate stock, minimum .032 inches thick, engraved areas enamel filled or background enameled with natural aluminum engraved characters.
   3. Materials for Outdoor Applications: As recommended by nameplate manufacturer to suit environmental conditions.

G. Fire Alarm Signs: 9 x 12 inches, metal, with the words “FIRE ALARM” imprinted thereon in white letters upon a red background. Include a white arrow pointing down, left or right showing the route to, or actual location of the fire alarm stations. Frame the outside edges of the signs in red and white diagonal stripes.
   1. Sign Mounting Styles:
      a. Single face for mounting flat against the wall.
      b. Double faced for mounting extended from wall.

H. Manual Fire Alarm Box Signs: Precision engrave letters with uniform margins, character size minimum 1/8 inch high, stating “LOCAL ALARM ONLY - NOT CONNECTED TO FIRE DEPARTMENT-CALL FIRE DEPARTMENT BY TELEPHONE”.
   1. Phenolic: Two color (red surface, white core) laminated engraver's stock, 1/16 inch minimum thickness, machine engraved to expose inner core color.

1. Markers:
   a. Premarked self-adhesive; W.H. Brady Co.’s B292, B708, Ideal Industries’ Mylar/Cloth wire markers, or Markwick Corp.’s permanent wire markers, Plastic Extruded Parts Inc.’s Flexible Sleeve or ID Band Markers, or Thomas and Betts Co.’s E-Z Code WSL self-laminating.
   b. Other Styles: To suit application by W.H. Brady Co., Ideal Industries, Markwick Corp., Plastic Extruded Parts, Inc., or Thomas and Betts Co.

2.16 SYSTEM KEYING

A. All system locks, key switches, etc., shall operate with the same key.
2.17 ACCESSORIES
   A. Include accessories required to perform the functions summarized in SYSTEM DESCRIPTION and indicated on the drawings.

2.18 FIRE EXTINGUISHER
   A. CO2 type fire extinguisher, minimum 20 pound unit by Amerex Corp., Ansul Inc., Fire-End and Croker Corp., or Walter Kidde Portable Equipment, Inc.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS
   A. Testing Existing Sub-Systems:
      1. Prior to installing the new system, test the existing sub-systems (Kidde CO2) to ascertain their operating condition:
      2. Test shall be witnessed by the Company Field Advisor and the Owner's Representative.
      3. Conduct tests that are disruptive to facility personnel after normal working hours as directed.
      4. Prepare a written report for the Owner's Representative indicating the repairs required, if any, to make the existing sub-systems function properly.
      5. Repairs to the existing sub-systems are not included in the Work unless requested by Order on Contract.

3.02 INTERRUPTIONS TO EXISTING SUB-SYSTEMS
   A. Maintain the existing sub-systems in their present condition to the extent possible while installing new Work.
   B. Prior to making changes or removals relative to the existing sub-systems, notify the Owner's Representative and have procedures approved.
   C. When changes or removals are required to the existing fire alarm system such that its ability to act as a fire alarm system is impaired, provide a temporary fire alarm system so that the building is protected at all times by a functioning fire alarm system. Notify Building Supervisor (thru Owner's Representative) of proposed temporary measures and scheduling. Both the proposed temporary measures and the scheduling must be approved by the Owner's Representative.
   D. Provide signs, instructions and alternate methods for reporting a fire.
3.03 INSTALLATION

A. Install system in accordance with the Company's printed instructions unless otherwise indicated.

B. Do not install smoke detecting devices until the Work (including cleaning) of all trades in the area has been completed. Protect installed smoke detecting devices from airborne dust and debris.

C. Mount smoke detecting devices, and seal air holes in the back of the devices (including interior of raceways and holes associated with installation of boxes and raceways) so that air flow from inside of housing or from the periphery of the housing will not prevent entry of smoke during a fire or test condition. Seal air holes with gaskets, expanding silicone foam, or other sealants as approved.

E. Wiring For Survivability:
   1. Signals from manual fire alarm boxes and other fire alarm initiating devices within a building transmitted over the same signaling line circuit shall not interfere with the manual fire alarm box signals when both types of initiating devices are operated at the same time.
   2. Failure of equipment or a fault on one or more installation wiring conductors of one notification appliance circuit shall not result in functional loss of any other notification appliance circuit.
   3. Connect MFAC Panel other system components requiring a primary power supply to dedicated branch circuits.
      a. Do not connect MFACP to a 2 pole device that can trip both poles at once, such as a 2 pole circuit breaker with handle tie (omit the tie).
   4. Splices in wiring in vertical risers is prohibited.
   5. Avoid splices in horizontal runs. When splices are necessary, use junction boxes. Exception: For 2-hour fire rated cable assembly, use UL listed methods to maintain 2-hour rating.
      a. Make splices with mechanical or hydraulic type pressure connectors. The use of wire nuts is prohibited.
      b. Paint cover of junction boxes fire department red.
   6. Protect notification appliance circuits and other circuits necessary for the operation of the notification appliance circuits from the point at which they exit the fire alarm panel until the point that they enter the notification zone that they serve using one or more of the following methods:
      a. A 2-hour rated cable assembly.
      b. A 2-hour rated shaft or enclosure.
      c. A 2-hour rated stairwell in a building fully sprinklered.
   7. Wiring Class A, Style 6, 7, D, E, or Z Signaling Line Circuits, Initiating Device Circuits and Notification Appliance Circuits: Do not install both legs of Class A, Style 6, 7, D, E, or Z circuits in same cable assembly, enclosure, or raceway back to MFACP or ICU’s.
      a. Run return legs along another route to obtain maximum benefit of these alternate path circuits.
F. Identification, Labeling, Marking:
   5. Nameplates:
      a. Install on each manual fire alarm box a nameplate stating: Floor number, and location (1st Fl, east, etc.).
      c. Label the device used as the circuit disconnecting means for the dedicated branch circuits serving the system “FIRE ALARM CIRCUIT CONTROL” with white letters on a red background.
      d. Install nameplate on each remote alarm indicator stating the location of its smoke detecting device and the area protected by the smoke detecting device and its function
   6. Power-Limited Circuits: Mark circuits at terminations, indicating that circuit is a power-limited fire protective signaling circuit.
   7. Fire Alarm Signs: Where directed, install ______ single face signs mounted flat against the wall and ______ double faced signs mounted extended from the wall at conspicuous locations, drawing attention to the manual fire alarm boxes. Fasten signs to walls with vandal resistant fasteners.
   9. Identification of Circuits: Identify wires and cables by system and function in interconnection cabinets, and FACP's to which they connect with premarked, self-adhesive, wraparound type markers. Designations shall correspond with point to point wiring diagrams.
   10. Battery Data: Insert a copy of the battery warranty in each battery compartment and mark on batteries the date placed in service.
   11. Alarm Verification Warning Marking: Affix to the inside of each FACP, a list indicating:
      a. Affected circuits.
      b. Delay (seconds).
      c. The smoke detector model numbers used.

H. Protective Devices: Install where indicated on the drawings.
   1. Where devices are installed on wood or masonry surfaces, attach protective devices directly to the surface with vandal resistant fasteners.
   2. Where devices are installed on suspended ceiling provide additional supports in the ceiling, such as channel support system, angle iron or additional runner bars. Fasten the additional supports rigidly to the ceiling runner bar system. Attach frame or brackets of protective device to the supports with vandal resistant fasteners. Install metal spacers between the protective device frame and the supports so that the ceiling tiles will not be a part of the support system.
   3. Use finishing collar between surface and protective device where protective device cannot be mounted tight against surface due to job conditions.
I. Locate fire extinguisher proximate to MFACP.

3.04 FIELD QUALITY CONTROL

A. Preliminary System Test:
   1. Preparation: Have the Company Field Advisor adjust the completed system and then operate it long enough to assure that it is performing properly.
   2. Run a preliminary test for the purpose of:
      a. Determining whether the system is in a suitable condition to conduct an acceptance test.
      b. Checking and adjusting equipment.
      c. Training facility personnel.

B. System Acceptance Test:
   1. Preparation: Notify the Owner's Representative at least 3 working days prior to the test so arrangements can be made to have a Facility Representative witness the test.
   2. Supply all equipment necessary for system adjustment and testing.
   3. Make the following tests:
      a. Test the system in accordance with NFPA 72, Chapter 7.
         1) Follow test methods stated in Table 7-2.2.
         2) Record results on NFPA 72 Figure 1-6.2.1 Record of Completion.
      b. Test system operation step by step as summarized in SYSTEM DESCRIPTION.
   4. Submit written report of test results signed by Company Field Advisor and the Owner's Representative. Also complete an NFPA Record of Completion.
      a. Mount a copy of the written report of test results, and the NFPA 72 Record of Completion in plexiglass enclosed frame assemblies adjacent to the MFACP (one framed assembly for each report).

3.05 INSULATED CONDUCTOR SCHEDULE - TYPES AND USE

A. Signaling Line Circuits, Initiating Device Circuits and Notification Appliance Circuits:
   1. Power-Limited Circuits: For interior wiring (in raceways) use power-limited fire alarm circuit multiconductor cable types specified in PART 2 except where a 2-hour fire rated cable assembly is required.
      a. Number of conductors and conductor size as recommended by the Company producing the system, except that conductor size shall not be less than No. 18 AWG for signaling line circuits and not less than No. 16 AWG for initiating device circuits and notification appliance circuits.
b. Using Nonpower-Limited Wiring On Power-Limited Circuits: Wiring size and types specified for nonpower-limited circuits may be used for power-limited circuits if power-limited circuits are reclassified and the power-limited markings are eliminated. Refer to NFPA 70 Article 760-52(a) Exception No. 3.

2. Nonpower-Limited Circuits: For interior wiring (in raceways) use nonpower-limited fire alarm circuit single conductors or multiconductor cable types specified in PART 2 except where a 2-hour fire rated cable assembly is required.
   a. Number of conductors and conductor size as recommended by the Company producing the system, except that conductor size shall not be less than No. 18 AWG for signaling line circuits, not less than No. 16 AWG for initiating device circuits, and not less than No. 14 AWG for notification appliance circuits.

3. Where wiring is specifically indicated on drawings not to be run in raceway, use metal-clad cable type MC (concealed, unless otherwise indicated), except where a 2-hour fire rated cable assembly is required.

D. Other Circuits for Which 2-Hour Fire Rated Cable Assembly is Specified or Indicated:
   1. Use CI cable in rigid steel conduit, MI cable, MC/CI cable or FPL/EMT.
      a. Where MI or MC/CI cable is used and run in areas subjecting cable to corrosion, use PVC or HDPR jacketed cable (nonmetallic jacketed cable is not suitable for use in ducts, plenums or other spaces used for environmental air). Use nonmetallic jacketed cable in the following areas:
         i) __________________________

E. Control Circuits: Associated with the Fire Alarm System: Use Class 1, 2, and 3 wiring specified in Section 260519.

F. Primary Supply Circuits and Secondary Supply Wiring:
   1. Use electric light and power wiring specified in Section 260519.

END OF SECTION
NY Rising – Governor’s Office of Storm Recovery  
GOSR Work Order Number: NTF-1-DES  
Edgewater Park Volunteer Fire Department — Storm Hardening and Abatement  
SECTION 312316 - EXCAVATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Excavating for footings and slabs-on-grade.

1.02 SUBMITTALS

A. Field Quality Control Submittals: Document visual inspection of load-bearing excavated surfaces.

1.03 PROJECT CONDITIONS

A. Verify that survey bench mark and intended elevations for the Work are as indicated.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench mark and intended elevations for the work are as indicated.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. Locate, identify, and protect utilities that remain and protect from damage.

C. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

D. Protect plants, lawns, and trees to remain.

3.03 EXCAVATING

A. Excavate to accommodate new structures and construction operations.

B. Notify Architect/Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

C. Slope banks of excavations deeper than 4 feet (1.2 meters) to angle of repose or less until shored.

D. Do not interfere with 45 degree bearing splay of foundations.

E. Cut utility trenches wide enough to allow inspection of installed utilities.

F. Hand trim excavations. Remove loose matter.

G. Remove lumped subsoil, boulders, and rock up to 1/3 cu yd (0.25 cu m) measured by volume.

H. Grade top perimeter of excavation to prevent surface water from draining into excavation.
NY Rising – Governor’s Office of Storm Recovery
GOSR Work Order Number: NTF-1-DES
Edgewater Park Volunteer Fire Department — Storm Hardening and Abatement
SECTION 312316 - EXCAVATION

I. Remove excavated material that is unsuitable for re-use from site.
J. Stockpile excavated material to be re-used in area designated on site
K. Remove excess excavated material from site.

3.04 FIELD QUALITY CONTROL
A. Provide for visual inspection of load-bearing excavated surfaces before placement of foundations.

3.05 PROTECTION
A. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.
B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

END OF SECTION 312316
NY Rising – Governor’s Office of Storm Recovery  
GOSR Work Order Number: NTF-1-DES  
Edgewater Park Volunteer Fire Department — Storm Hardening and Abatement  
SECTION 312317 - BACKFILLING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Site filling and backfilling.
B. Fill under sidewalks, border treatment, slabs on grade, and paving.
C. Consolidation and compaction.
D. Fill for over-excavation.

1.02 REFERENCES

B. ANSI/ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb Rammer and 12 inch Drop.
D. ANSI/ASTM D1556 - Standard Test Methods for Density and Unit Weight of Soil in Place by the Sand Cone Method.

PART 2 - PRODUCTS

2.01 FILL MATERIALS

A. Type A - Coarse Stone, Gravel: Angular, washed natural stone; free of shale, clay, friable material, sand, debris; minimum size 2 inches in diameter, maximum size 3 inches in diameter.
B. Type C - Sand: Natural river or bank sand; washed, free of silt, clay, loam, friable or soluble materials, or organic matter; graded in accordance with ANSI/ASTM C136, within the following limits:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>% Passing</th>
</tr>
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<tbody>
<tr>
<td>No. 4</td>
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</tr>
<tr>
<td>No. 14</td>
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<td>No. 50</td>
<td>5 to 90</td>
</tr>
<tr>
<td>No. 100</td>
<td>4 to 30</td>
</tr>
<tr>
<td>No. 200</td>
<td>0 to 1</td>
</tr>
</tbody>
</table>

C. Subsoil: Reused, graded, free of lumps larger than 6 inches, rocks larger than 3 inches, and debris.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify fill materials to be reused are acceptable.
3.02 PREPARATION

A. Compact subgrade to density requirements for subsequent backfill materials.
B. Cut out soft areas of subgrade not capable of in situ compaction. Backfill with Type C fill and compact to density equal to or greater than requirements for subsequent backfill material.
C. Prior to placement of controlled fill at building areas and base course material at paved areas, compact subsoil to 95% of its maximum dry density in accordance with ANSI/ASTM D698.

3.03 BACKFILLING

A. Backfill areas to contours and elevations with unfrozen materials.
B. Systematically backfill to allow maximum time for natural settlement. Do not back-fill over porous, wet, frozen or spongy subgrade surfaces.
C. Granular Fill: Place and compact materials in continuous layers not exceeding 6 inches compacted depth.
D. Subsoil Fill: Place and compact material in continuous layers not exceeding 6 inches compacted depth.
E. Controlled Backfill: Place and compact material in continuous layers, not exceeding 6 inches compacted depth. Contractor shall not proceed with subsequent layer of backfill until compacted layer is tested and backfill is found to be compacted to 95% of its maximum dry density in accordance with ANSI/ASTM D698.
F. Employ a placement method that does not disturb or damage foundation water-proofing and protective cover, and utilities in trenches.
G. Maintain optimum moisture content of backfill materials to attain required compaction density.
H. Backfill against supported foundation walls. Do not backfill against unsupported foundation walls.
I. Slope grade away from building minimum 1” inch in 10 feet, unless noted otherwise.
J. Make grade changes gradual. Blend slope into level areas.
K. Remove surplus backfill materials from site.
L. Leave fill material stockpile areas completely free of excess fill materials.

3.04 TOLERANCES

A. Top Surface of Backfilling Under Paved Areas: + 1 inch from required elevations.

3.05 FIELD QUALITY CONTROL

A. Tests and analysis of fill material will be performed in accordance with ANSI/ASTM D698.
B. Compaction testing will be performed in accordance with ANSI/ASTM D1556 or D1557.

C. If tests indicate work does not meet specified requirements, remove work, replace and retest at no cost to Owner.

3.06 PROTECTION OF FINISHED WORK

A. Protect finished work from damage due to continuing construction activity.

B. Recompact fills subjected to vehicular traffic.

3.07 SCHEDULE

A. Fill Under Seed/Sod Areas:
   1. Subsoil fill, to 4 inches below finish grade, compacted to 95%.

B. Fill Under Landscaped Areas:
   1. Subsoil fill, to 12 inches below finish grade, compacted to 95%.

C. Fill Under Asphalt and Concrete Paving and Slabs on Grade:
   1. Subsoil fill, to 5-1/2 inches below finish asphalt paving elevation, to 5 inches below concrete ramp and slabs on grade finish elevation, 8 inches below generator pad finish elevation, and to 6 inches below concrete drive-way apron finish elevation, as shown on plans, compacted to 95%.

D. Fill to Correct Over-excavation:
   1. Type C fill, to proposed subgrade, compacted to 95%.

END OF SECTION 312317
Inspection Report

1 Adee Drive
Interior Renovation
Job # ACP006381

Crosscheck Inspection Services, LLC
Eugene P. Bifulco, PE, Managing Principal

Inspection Date: 05/06/2022
Inspector: Alan Soh
5-12-22

Don Amen II
Mark Anthony Architectural
1563 Bellmore Ave
North Bellmore, NY 11710
don@markitex.com

SUBJECT: Asbestos Containing Material was Found in Project at 1Adee Dr.

Dear Don,

On 5/6/2022, Crosscheck Inspection Services, LLC conducted an Asbestos Investigation at 1 Adee Dr. in relation to the interior renovation of a firehouse.

Based upon the ‘Asbestos Analysis of Bulk Material’ report provided by EMSL Analytical it was determined that Asbestos containing material is present per EMSL Order 032207019.

The location where asbestos containing material was discovered was at/in [Enter Description Regarding the Location of the Confirmed or Assumed Asbestos]

- Roof Flashing and Membrane - 32x20 640sf
- 2nd fl. wall finish - 600sf

An ACP5 cannot be issued. The amount of ACMs found exceeds 10 Square Feet or 25 Linear Feet.

Please note: A copy of Crosscheck’s report and EMSL Lab Results are included for your reference.

Sincerely,

Alan Soh
DEP Asbestos Investigator – Crosscheck Inspection Services, LLC
Asbestos Investigator License # 151361
## Contents

<table>
<thead>
<tr>
<th>#</th>
<th>Asbestos</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Asbestos</td>
</tr>
<tr>
<td>7</td>
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</tr>
<tr>
<td>13</td>
<td>Asbestos</td>
</tr>
</tbody>
</table>
#3: Asbestos

status: Open

type: Inspection Types > Asbestos

Description:
5-6-22(soh)
3rd fl.
sample 18-20: plaster & rockboard
Roof
Sample 21&22: roof membrane
Sample 23&24: roof flashing

5-12-22(soh) Per EMSL Order #032207019, asbestos was detected in samples 21-24. Remaining samples tested negative.

Assigned to: —

Created by: alan soh (Crosscheck Inspection Services)

Created on: May 6, 2022

Location: —

Location details: —

Due date: —

Start date: —
Placement

DM-003.00 (THIRD FLOOR DEMOLITION PLAN AND NOTES)

Root cause

Custom fields

Action Needed

Images

20220506_114021_photo
Taken on May 6, 2022, 11:40 AM EDT
Added on May 6, 2022, 11:40 AM EDT
Added by alan soh

20220506_114028_photo
Taken on May 6, 2022, 11:40 AM EDT
Added on May 6, 2022, 11:40 AM EDT
Added by alan soh
20220506_114510_photo
Taken on May 6, 2022, 11:45 AM EDT
Added on May 6, 2022, 11:45 AM EDT
Added by alan soh

20220506_114528_photo
Taken on May 6, 2022, 11:45 AM EDT
Added on May 6, 2022, 11:45 AM EDT
Added by alan soh
#2: Asbestos

**Status**  
Open

**Type**  
AB  
Inspection Types > Asbestos

### Standard fields

| Description | 5-6-22(soh)  
sample 10-12: wall finish  
Sample 13&14: ceiling tile  
Sample 15-17: ceiling plaster and rockboard |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5-12-22(soh)</td>
<td>Per EMSL Order #032207019, asbestos was detected in samples 10-12. Remaining samples tested negative.</td>
</tr>
</tbody>
</table>

**Assigned to**  
—

**Created by**  
alan soh (Crosscheck Inspection Services)

**Created on**  
May 6, 2022

**Location**  
—

**Location details**  
2nd fl.

**Due date**  
—

**Start date**  
—

**Placement**  
DM-002.00 (SECOND FLOOR DEMOLITION PLAN AND NOTES)
Root cause

Custom fields

Action Needed

Images

20220506_112118_photo
Taken on May 6, 2022, 11:21 AM EDT
Added on May 6, 2022, 11:21 AM EDT
Added by alan soh

20220506_112144_photo
Taken on May 6, 2022, 11:21 AM EDT
Added on May 6, 2022, 11:21 AM EDT
Added by alan soh
#1: Asbestos

**Status**
- Closed

**Type**
- Inspection Types > Asbestos

**Standard fields**

**Description**
5-6-22(soh)
Sample 1-3: ceiling insulation
Sample 4&5: dropped ceiling tile
Sample 6&7: gypsum board
Sample 8&9: window caulk

5-12-22(soh) Per EMSL order #032207019, no asbestos was detected.

**Assigned to**
- —

**Created by**
- alan soh (Crosscheck Inspection Services)

**Created on**
- May 6, 2022

**Location**
- —

**Location details**
- —

**Due date**
- —

**Start date**
- —

**Placement**
- DM-001.00 (FIRST FLOOR DEMOLITION PLAN AND NOTES)
Root cause

Custom fields

Action Needed

Images

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Taken on May 6, 2022, 10:39 AM EDT
Added on May 6, 2022, 10:51 AM EDT
Added by alan soh

20220506_103924_photo
Taken on May 6, 2022, 10:39 AM EDT
Added on May 6, 2022, 10:52 AM EDT
Added by alan soh
20220506_103959_photo
Taken on May 6, 2022, 10:39 AM EDT
Added on May 6, 2022, 10:54 AM EDT
Added by alan soh

20220506_104025_photo
Taken on May 6, 2022, 10:40 AM EDT
Added on May 6, 2022, 10:55 AM EDT
Added by alan soh
20220506_104049_photo
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Added on May 6, 2022, 10:55 AM EDT
Added by alan soh

20220506_105051_photo
Taken on May 6, 2022, 10:50 AM EDT
Added on May 6, 2022, 10:56 AM EDT
Added by alan soh
20220506_111608_photo
Taken on May 6, 2022, 11:16 AM EDT
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Added by alan soh

20220506_111616_photo
Taken on May 6, 2022, 11:16 AM EDT
Added on May 6, 2022, 11:16 AM EDT
Added by alan soh
# Test Report: Asbestos Analysis of Bulk Material

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Description</th>
<th>Color</th>
<th>Asbestos</th>
<th>PLM NYS 198.1 Friable</th>
<th>PLM NYS 198.6 VCM</th>
<th>TEM NYS 198.4 NOB</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>1st - Ceiling Insulation</td>
<td></td>
<td></td>
<td>Not Analyzed</td>
<td>Not Analyzed</td>
<td>Inconclusive: None Detected</td>
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<td>1st - Ceiling Insulation</td>
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<td>Not Analyzed</td>
<td>Not Analyzed</td>
<td>None Detected</td>
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<tr>
<td>3</td>
<td>1st - Ceiling Insulation</td>
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<td>Not Analyzed</td>
<td>Not Analyzed</td>
<td>None Detected</td>
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<tr>
<td>4</td>
<td>1st Fl. - Dropped Ceiling Tile</td>
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<td>Not Analyzed</td>
<td>None Detected</td>
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<tr>
<td>5</td>
<td>1st Fl. - Dropped Ceiling Tile</td>
<td>Gray</td>
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<td>Not Analyzed</td>
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<td>None Detected</td>
</tr>
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**Initial report from:** 05/10/2022 11:44:21
# Test Report: Asbestos Analysis of Bulk Material

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<th>Sample ID</th>
<th>Description</th>
<th>Homogeneity</th>
<th>Analyzed Date</th>
<th>Color</th>
<th>Fibrous Non-Fibrous</th>
<th>Asbestos</th>
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<tbody>
<tr>
<td>6-Joint Compound</td>
<td>1st Fl. - Gypsum Board</td>
<td>Homogeneous</td>
<td>05/10/2022</td>
<td>White</td>
<td>50.00% Ca Carbonate</td>
<td>None Detected</td>
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<tr>
<td>032207019-0006</td>
<td>4.00% Mica</td>
<td>46.00% Non-fibrous (other)</td>
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<td></td>
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</tr>
<tr>
<td>PLM NYS 198.1 Friable</td>
<td>None Detected</td>
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<td></td>
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<tr>
<td>PLM NYS 198.6 VCM</td>
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<tr>
<td>PLM NYS 198.6 NOB</td>
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<td>TEM NYS 198.4 NOB</td>
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<tr>
<td>6-Gypsum Board</td>
<td>1st Fl. - Gypsum Board</td>
<td>Homogeneous</td>
<td>05/10/2022</td>
<td>Brown/ Gray</td>
<td>65.00% Ca Carbonate</td>
<td>None Detected</td>
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<tr>
<td>032207019-0006A</td>
<td>5.00% Mica</td>
<td>30.00% Non-fibrous (other)</td>
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<tr>
<td>7-Joint Compound</td>
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<td>Homogeneous</td>
<td>05/10/2022</td>
<td>White</td>
<td>50.00% Ca Carbonate</td>
<td>None Detected</td>
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<tr>
<td>032207019-0007</td>
<td>4.00% Cellulose</td>
<td>46.00% Non-fibrous (other)</td>
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<tr>
<td>PLM NYS 198.1 Friable</td>
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<tr>
<td>7-Gypsum Board</td>
<td>1st Fl. - Gypsum Board</td>
<td>Homogeneous</td>
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<tr>
<td>8</td>
<td>1st Fl. - Window Caulk</td>
<td>Heterogeneous</td>
<td>05/10/2022</td>
<td>White</td>
<td>100.00% Other</td>
<td>Inconclusive: None Detected</td>
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<td>9</td>
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<td>White</td>
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<tr>
<td>032207019-0009</td>
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</table>
### Test Report: Asbestos Analysis of Bulk Material

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Description</th>
<th>Color</th>
<th>Non-Fibrous</th>
<th>Asbestos</th>
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</tr>
<tr>
<td>10</td>
<td>2nd Fl. - Wall Finish</td>
<td>05/10/2022</td>
<td>Gray/White</td>
<td>PLM NYS 198.1 Friable</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>5.00% Wollastonite</td>
<td>5.00% Wollastonite</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>10.00% Ca Carbonate</td>
<td>3.30% Anthophyllite</td>
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<td>51.70% Non-fibrous (other)</td>
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<tr>
<td></td>
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<td>25.00% Perlite</td>
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<td>5.00% Quartz</td>
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<tr>
<td>11</td>
<td>2nd Fl. - Wall Finish</td>
<td>05/10/2022</td>
<td>Gray/White</td>
<td>PLM NYS 198.1 Friable</td>
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<td></td>
<td></td>
<td></td>
<td>5.00% Wollastonite</td>
<td>5.00% Wollastonite</td>
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<td>10.00% Ca Carbonate</td>
<td>3.50% Anthophyllite</td>
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<td>51.50% Non-fibrous (other)</td>
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<td>5.00% Quartz</td>
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<td>12</td>
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<td>14.90% Non-fibrous (other)</td>
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<td>25.00% Perlite</td>
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<td>20.00% Quartz</td>
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<tr>
<td>13</td>
<td>2nd Fl. - Ceiling Tile</td>
<td>05/10/2022</td>
<td>Tan</td>
<td>PLM NYS 198.1 Friable</td>
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<tr>
<td>14</td>
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</table>
# Test Report: Asbestos Analysis of Bulk Material

## Results

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Description</th>
<th>Homogeneity</th>
<th>Fibrous</th>
<th>Non-Fibrous</th>
<th>Asbestos</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-Skim Coat</td>
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<td>Homogeneous</td>
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</tr>
<tr>
<td>032207019-0015</td>
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<td>05/10/2022</td>
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<td>55.00% Ca Carbonate</td>
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<td>45.00% Non-fibrous (other)</td>
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<tr>
<td>15-Rough Coat</td>
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<td>Gray</td>
<td>25.00% Ca Carbonate</td>
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</tr>
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<td>3.00% Mica</td>
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</tr>
<tr>
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<td>45.00% Quartz</td>
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<td>Gray</td>
<td>25.00% Ca Carbonate</td>
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<td></td>
<td>3.00% Mica</td>
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<td>23.00% Non-fibrous (other)</td>
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<td>45.00% Quartz</td>
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<td>35.00% Non-fibrous (other)</td>
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<td>05/10/2022</td>
<td>Gray</td>
<td>30.00% Ca Carbonate</td>
<td>None Detected</td>
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<tr>
<td></td>
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<td></td>
<td>2.00% Mica</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>40.00% Non-fibrous (other)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>25.00% Quartz</td>
<td></td>
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Initial report from: 05/10/2022 11:44:21
# Test Report: Asbestos Analysis of Bulk Material

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<tr>
<th>Sample ID</th>
<th>Description</th>
<th>Homogeneity</th>
<th>PLM NYS 198.1 Friable Date</th>
<th>PLM NYS 198.1 Friable Color</th>
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<th>PLM NYS 198.6 VCM</th>
<th>PLM NYS 198.6 NOB</th>
<th>TEM NYS 198.4 NOB</th>
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<td>18-Skim Coat 032207019-0018</td>
<td>3rd Fl. - Plaster &amp; Rockboard</td>
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<td>05/10/2022</td>
<td>White</td>
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<td>Not Analyzed</td>
<td>Not Analyzed</td>
<td>60.00% Ca Carbonate 40.00% Non-fibrous (other)</td>
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<td>Not Analyzed</td>
<td>Not Analyzed</td>
<td>25.00% Ca Carbonate 4.00% Mica 27.00% Non-fibrous (other) 40.00% Quartz</td>
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<tr>
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<tr>
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<td>60.00% Ca Carbonate 40.00% Non-fibrous (other)</td>
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Initial report from: 05/10/2022 11:44:21
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Initial report from: 05/10/2022 11:44:21
EMSL Analytical, Inc.
307 West 38th Street New York, NY 10018
Tel/Fax: (212) 290-0051 / (212) 290-0058
http://www.EMSL.com / manhattanlab@emsl.com

Test Report: Asbestos Analysis of Bulk Material

The samples in this report were submitted to EMSL for analysis by Asbestos Analysis of Bulk Materials via NYS ELAP Approved Methods. The reference number for these samples is the EMSL Order ID above. Please use this reference number when calling about these samples.

Report Comments:

Sample Receipt Date: 5/6/2022  Sample Receipt Time: 3:41 PM
Analysis Completed Date: 5/11/2022  Analysis Completed Time: 1:22 AM

Analyst(s):

Johannes Breckheimer PLM NYS 198.1 Friable (11)

Laura Harris PLM NYS 198.1 Friable (7)

Ordep Gonzalez PLM NYS 198.6 NOB (13)

Hongyan Ran TEM NYS 198.4 NOB (6)

Steven Li TEM NYS 198.4 NOB (3)

Samples reviewed and approved by:

Charles Johnson, Asbestos Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. Estimation of uncertainty available upon request. This report is a summary of multiple methods of analysis, fully compliant reports are available upon request. All samples examined for the presence of vermiculite when analyzed via NYS 198.1. A combination of PLM and TEM analysis may be necessary to ensure consistently reliable detection of asbestos. Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. This report must not be used to claim product endorsement by NVLAP of any agency or the U.S. Government. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing. NOB= Non friable organically bound; N/A= Not applicable VCM= Vermiculite containing material.

Initial report from: 05/10/2022 11:44:21

Doc ID: 20220513123221430
Sertifi Electronic Signature
### Daily Field Report

**Visit ID:** 01_ASBS  
**Inspection Date:** 5/06/2022  
**Job #:** ACP006381  
**Crosscheck #:** 22053607

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<tr>
<td>KMA</td>
<td>1 Adee Drive, Bronx - Interior Renovation</td>
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<tr>
<td>OWNER:</td>
<td>LOCATION: 1 Adee Drive, Bronx - Interior Renovation</td>
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<tr>
<td>Peter Sertzoglou</td>
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<tr>
<td>CROSSCHECK PROJECT MANAGER:</td>
<td>CROSSCHECK FIELD REPRESENTATIVE:</td>
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<td>Eugene Bifulco</td>
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<tr>
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<th>CONTRACTOR’S EQUIPMENT OBSERVED IN USE:</th>
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<tr>
<td>Alan Soh</td>
<td>Inspectors Team</td>
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<tr>
<td>Alan Soh</td>
<td>Eugene Bifulco</td>
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**DATE:** 05/13/2022  
**DATE:** 05/15/2022
ATTACHMENT D – PLANS & DRAWINGS

THE FOLLOWING PLANS AND DRAWINGS ARE INCORPORATED HEREIN BY REFERENCE AS IF SET FORTH IN THEIR ENTIRETY:

1. Approved GC.FO- X00735640-I1
2. Approved Electrical Drawings
3. Approved Mechanical Plans X00736087-I1
4. Approved Plumbing Plans- X00736306-I1
5. Fire Alarm Plans
ATTACHMENT G: CONSTRUCTION SIGNAGE REQUIREMENTS
All projects funded through GOSR are required to have a weatherproof outdoor project sign. The expense associated with meeting this requirement is an eligible expense and may be charged as a construction or an administrative expense. Specifications for project signs should conform to the following.

A. Sign Specifications

Installation
1. Install sign at the site within one week of the start of construction.
2. Erect sign in a prominent location, secure from vandalism.

Materials
1. Signboard: 4’ X 8’, 3/4” plywood, MDO B-B EXT-APA.
2. Primer: As recommended by finish coat manufacturer for the substrate and finish material.
3. Lettering and striping shall be uniform with sharp, neat profiles.
4. “Optional Information” included on sign shall be visually subordinate to other information provided.
5. Supports: Treated D.F. posts.

Maintenance and Removal
1. Maintain the sign plumb and level for the duration of the work.
2. The sign must be removed from the property 60 days after final payment or project completion, whichever is later.

B. Sign Design

The sign design layout must follow the sample layout shown below.

C. Sign Placement

1. With respect to placement, traffic control signs, regulatory, warning, and guide signs have a higher priority than GOSR signage.
2. In no case shall these signs be placed such that they obscure road users’ view of other traffic control devices.
3. GOSR signs should be placed where they can be easily identified with the corresponding projects.
4. If the placement of GOSR signs conflicts with newly installed higher priority signs, or traffic signals, or temporary traffic control devices, or other priority devices, the sign should be relocated.
5. Due to public safety concerns, GOSR signs should not be allowed at the following locations:
   • On the front, back, adjacent to or around any traffic control device, including traffic signs, signals, changeable message signs, traffic control device posts or structures, or bridge piers.
   • At key decision points where a driver’s attention is more appropriately focused on traffic control devices, roadway geometry, or traffic conditions. These locations include, but are not limited to exit and entrance ramps, intersections controlled by traffic signals or by stop or yield signs, highway-rail grade crossings, and areas of limited sight distance.
Storm Hardening at North Tower Firehouse

Governor Kathy Hochul
State of New York
Governor's Office of Storm Recovery

Edgewater Park Volunteer Fire Department
1 Adee Drive, Edgewater Park, NY 10465
Expected End Date: _________________

For more information on this project, please visit www.stormrecovery.ny.gov

This project is made possible by a grant from the State’s Housing Trust Fund Corporation, funded by the U.S. Department of Housing and Urban Development Community Development Block Grant Disaster Recovery (CDBG-DR) Program
PROJECT:
EDGEEWATER PARK  
VOLUNTEER FIRE DEPARTMENT  
STORM HARDENING AND ABATEMENT
FOR  
GOVERNOR'S OFFICE OF STORM RECOVERY
60 BROAD STREET, 26TH FLOOR  
NEW YORK, NY 10004

PROJECT DIRECTORY:
DESIGN PROFESSIONAL  
Mark Anthony Munisteri, R.A.  
1563 Bellmore Avenue  
Bellmore, New York 11710  
Tel: 516-409-1900  
Fax: 516-409-9627

ADDITIONAL CONSULTANTS:
KM ASSOCIATES OF NEW YORK, INC.  
N.Y.C. BUILDING CODE, ZONING, & EXPEDITING  
158 W. 29TH STREET 7TH FLOOR,  
NEW YORK, NY 10001  
info@kmaofny.com  
Fax: 212-563-6753

LOCATION PLAN  
SITE PLAN

PROJECT INFORMATION
LOT #:  E  
LOT SIZE:  110,000 sq. ft.  
BUILDING USE:  F1-b Assembly, & C- Mercantile  
NUMBER OF STORIES:  3 + CELLAR  
CONSTRUCTION CLASSIFICATION:  NONE  
EXISTING - NO CHANGE  
EXISTING - NO CHANGE  
EXISTING - NO CHANGE

LOT COVERAGE
PROTECTION PLAN
1. THE BUILDING IS IN USE FOR FIRE DEPT AND COMMUNITY ACTIVITIES.
2. EGRESS: AT ALL TIMES IN THE COURSE OF CONSTRUCTION THE EGRESS FROM THE VARIOUS FLOORS OF THE BUILDING WILL BE MAINTAINED.
3. FIRE SAFETY: ALL PRECAUTIONS TO BE OBSERVED TO MAINTAIN FIRE SAFETY AS WELL AS ADDITIONAL SAFETY MEASURES NECESSITATED BY THE CONSTRUCTION SHALL BE STRICTLY OBSERVED.
4. HEALTH REQUIREMENTS: DUST TO BE KEPT TO A MINIMUM AND TO BE REMOVED AFTER COMPLETION OF WORK EACH DAY. DISPOSAL OF CONSTRUCTION DEBRIS MUST BE DONE IN THE SAFE MANNER. CONSTRUCTION NOISE WILL BE CEASED AFTER NORMAL WORKING HOURS. LIMIT NOISE TO ACCEPTABLE LEVELS. MAINTAIN SANITARY FACILITIES. CONTROL PEST AT ALL TIMES.
5. CONTRACTOR MUST COMPLY WITH APPLICABLE LAWS RELATING TO LEAD AND ASBESTOS. IF OBSERVED IMMEDIATELY CONTACT OWNER OR ARCHITECT.
6. ELECTRICAL, GAS, OR OTHER UTILITIES ARE NOT TO BE INTERRUPTED. (COORDINATE ANY SHUTDOWNS WITH THE OWNER.)
7. BUILDING SECURITY TO BE MAINTAINED TO PREVENT UNAUTHORIZED PERSON FROM ENTERING THE BUILDING.
8. FLOOR SHALL NOT BE OVERLOADED BEYOND WHAT IS PERMITTED.
9. NO STRUCTURAL WORK SHALL BE DONE THAT MAY ENDANGER THE OCCUPANTS.
10. THE REQUIREMENTS OF PROPERTY MAINTENANCE CODES SHALL BE STRICTLY OBSERVED.

ENERGY COMPLIANCE
TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGMENT, THESE PLANS AND SPECIFICATIONS ARE COMPLIANT WITH THE ENERGY CONSERVATION CODE OF NEW YORK CITY RESIDENTIAL-R4A

PROJECT DIRECTORY:
DESIGN PROFESSIONAL  
Mark Anthony Munisteri, R.A.  
1563 Bellmore Avenue  
Bellmore, New York 11710  
Tel: 516-409-1900  
Fax: 516-409-9627

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Fax: 212-563-6753

LOCATION PLAN  
SITE PLAN

PROJECT INFORMATION
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LOT SIZE:  110,000 sq. ft.  
BUILDING USE:  F1-b Assembly, & C- Mercantile  
NUMBER OF STORIES:  3 + CELLAR  
CONSTRUCTION CLASSIFICATION:  NONE  
EXISTING - NO CHANGE  
EXISTING - NO CHANGE  
EXISTING - NO CHANGE

LOT COVERAGE
PROTECTION PLAN
1. THE BUILDING IS IN USE FOR FIRE DEPT AND COMMUNITY ACTIVITIES.
2. EGRESS: AT ALL TIMES IN THE COURSE OF CONSTRUCTION THE EGRESS FROM THE VARIOUS FLOORS OF THE BUILDING WILL BE MAINTAINED.
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ENERGY COMPLIANCE
TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGMENT, THESE PLANS AND SPECIFICATIONS ARE COMPLIANT WITH THE ENERGY CONSERVATION CODE OF NEW YORK CITY RESIDENTIAL-R4A
GENERAL NOTES

1. The inspector's name and signature are required on this form. The inspector must be a certified or licensed professional with the appropriate qualifications.
2. This form must be completed and signed by the inspector before any work is started.
3. All work must be in accordance with the plans and specifications.
4. This form must be kept on file for a period of at least 5 years.

SPECIAL INSPECTION ITEMS

- CONSTRUCTED CAST-IN-PLACE CONCRETE
- PROGRESS INSPECTION ITEMS
- ENERGY CODE COMPLIANCE
- INSULATION PLACEMENT AND R-VALUES
- AIR SEALING AND INSULATION-VISUAL
- FENESTRATION U-FACTOR & PRODUCT RATING
- FENESTRATION AIR LEAKAGE
- FENESTRATION AREAS
- OCCUPANT LOAD
- BUILDING OCCUPANCY
- NET FLOOR AREAS/OCCUPANTS
- INSPECTION SCALE (IIC3)
- FINAL INSPECTION SCALE
- BC 1704.4
- SUBGRADE INSPECTION BC 1704.7.1
- SUBSURFACE CONDITIONS - FILL PLACEMENT AND IN-PLACE DENSITY BC 1704.7.2
- STRUCTURAL STABILITY - EXISTING BUILDINGS BC 1704.20.1
- FIRE-RESISTANT PENETRATIONS AND JOINTS BC 1704.27
- POST-INSTALLED ANCHORS (BB# 2014-018, 2014-019) BC 1704.32
- FOOTING AND FOUNDATION: BC 110.3.1
- FIRE-RESISTANT RATED CONSTRUCTION BC 110.3.4
- 28-116.2.4.2
- FEMALE LAVATORIES
- TOILET COUNT
- FIXTURE TYPE
- PROPOSED
- ACCEPTED
- Date: 05/27/2022
- ACCEPTED
- Date: 05/27/2022

ARCHITECTURAL NOTES

1. The contractor shall be responsible for the construction of the building to be in full compliance with the plans and specifications.
2. The contractor shall provide plans and specifications for the works to be performed.
3. The contractor shall submit a proposal for the work to be performed and obtain approval from the inspector.
4. The contractor shall ensure that all work is in accordance with the plans and specifications.
5. The contractor shall ensure that all work is completed in a timely manner.

FEMA MAP

1. The FEMA map indicates the flood zones and floodplain areas.
2. The FEMA map is used to determine the flood risk and the flood insurance rate.

ZONING MAP

1. The zoning map indicates the zoning districts and their regulations.
2. The zoning map is used to determine the allowable uses of the property and the building.

NOTE: This building is part of a tax lot that contains multiple buildings. This community is a cooperative.

ARCHITECTURAL NOTES, FEMA & ZONING MAPS

1. The architectural notes provide instructions for the construction of the building.
2. The FEMA notes provide instructions for the flood insurance rate.
3. The zoning notes provide instructions for the allowable uses of the property and the building.

INSPECTIONS

1. The inspections are performed by an inspector with the appropriate qualifications.
2. The inspections are performed at specific times and locations.
3. The inspections are performed to ensure that the work is in compliance with the plans and specifications.
4. The inspections are performed to ensure that the work is completed in a timely manner.
5. The inspections are performed to ensure that the work is in compliance with the applicable codes and regulations.

ARCHITECTURAL NOTES

1. The architectural notes provide instructions for the construction of the building.
2. The architectural notes provide instructions for the flood insurance rate.
3. The architectural notes provide instructions for the allowable uses of the property and the building.
4. The architectural notes provide instructions for the flood insurance rate.
ARCHITECTURAL RS
DOOR SILL DETAIL @ ROOF
ROUGHEN SURFACE & RIVET & SOLDER

ARCHITECTURAL RS
ROOFING FASTENERS. GROUT S.S. THREADED (2) 1/2" DIA. 6" LONG 8" MIN.

ADD NEW CAST-N-PLACE FLASHING. SEE EXTERIOR SADDLE DETAIL VINYL COVE BASE DETAIL BASE TRIM DETAIL SADDLE DETAIL NEW GYP. BD./SAFE-T-METAL STYLE OS-SP2 AS BY 4" 1/2" BRONZE SADDLE MIN. 1/2" DAM HEIGHT LANDING 5"

5" TO CONTINUE UNDER SADDLE BEYOND FLASHING & OTHER END

4" HIGH VINYL COVE BASE. REFER TO FINISH SCHEDULE

MORE INFORMATION.

DOOR HEAD DETAIL @ ROOF
AT JAMB (DET. ). PATCH & REPAIR ALL SURFACES TO RECEIVE CONDITION @ HEAD (DET. ) VERIFY SUBSTRATE CONDITION

16 GA. SUB-FRAME SECURED TO SUBSTRATE. VERIFY LINTEL AS NECESSARY TO PROVIDE CLEANSURFACE TO INSTALL NEW FURRING TO SCHEDULE

(2) LAYERS TYPE 'X' SPECIFICATION) 1/2" 1/2" (TYP). [964] X 2" 5/8" 7 3/4"

1 9/16" 2" 5/8" 3"

16 GA. WELDED METAL FRAME SECURED TO FACADE FACE OF STONE METAL FRAME WITH BACKER ROD & SEALANT, TYP.

5/8" 1/2" 1/2" (TYP).

1" 5/8" 2" 16 "GWB (EACH SIDE). FINISH AS SCHEDULED -TYP. 1/2" X 2

5/8" AS SCHEDULED -TYP. NUMBER 224A BY DYKES LUMBER OR APPROVED EQ., PAINT FINISH AS SCHEDULED

5"

5/8" 1 9/16" 2" 16 "GWB (EACH SIDE). FINISH AS SCHEDULED -TYP. 1/2" X 2

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5"
EXISTING VINYL SIDING. CUT BACK AS NECESSARY FOR NEW WOOD TRIM

EXISTING WALL CONSTRUCTION TO REMAIN

'J' CHANNEL

EXISTING MASONRY LINTEL TO REMAIN

5/8" GWB, FINISH AS SCHEDULED OR PLANS FOR LOCATIONS.

EXISTING STUD

SHIM AS REQUIRED CONT. BACKER ROD & SEALANT, BOTH SIDES ALUMINUM FLASHING W/ DRIP EDGE

EXISTING MASONRY WALL CONSTRUCTION EXISTING PLYWOOD AT OPENING. REPLACE IF DAMAGED.

WOOD CASING EXTENSION, PAINT FLASHING WITH TERMINATION BAR .040 ALUMINUM WRAPPED 2X4 PRESSURE TREATED WOOD TRIM

SHIM AS REQUIRED CONT. BACKER ROD & CAULKING, TYP.

ALUMINUM FLASHING W/ DRIP EDGE DOUBLE HUNG WINDOW. SEE WINDOW SCHEDULE.

FLASHING END DAMMED ALUMINUM FLASHING W/ DRIP EDGE

WOOD STOOL, PAINT

DOUBLE HUNG WINDOW.

SEE WINDOW SCHEDULE.

END DAMMED ALUMINUM FLASHING W/ DRIP EDGE

EXISTING MASONRY SILL TO REMAIN

EXISTING PLYWOOD AT OPENING. REPLACE IF DAMAGED.

3 1/2" EXISTING VINYL SIDING. CUT BACK AS NECESSARY FOR NEW WOOD TRIM

'J' CHANNEL

EXISTING WALL CONSTRUCTION TO REMAIN

BUILDING MATERIALS

3/4" SHEET ROCK BACKER ROD

FOR EXTERIOR USE

ALUMINUM SEAM SEALER

3/4" SHEET ROCK BACKER ROD

FOR EXTERIOR USE

ALUMINUM SEAM SEALER

GENERAL WINDOW NOTES

1. CONTRACTOR SHALL VERIFY ALL ROUGH OPENINGS IN FIELD PRIOR TO FABRICATION.

2. ALL OPERABLE WINDOW UNITS SHALL RECEIVE INSECT SCREENS, TYP.

3. AIR LEAKAGE: PROVIDE FLASHING, EXPANDABLE FOAM SEALANT, AND CAULKING AT ROUGH OPENING FRAME JOINTS TO CREATE A CONTINUOUS AIR BARRIER WITH SURROUNDING WALL SYSTEM.

HEAD DETAIL

SCALE: 3' = 1'-0"

SILL DETAIL

SCALE: 3' = 1'-0"

EXTERIOR VAIL SHEET:

WALL SHEET:

EXTERIOR VAIL SHEETS:

WALL SHEET:

CONTRACTOR NOTE

CONTRACTOR TO PROVIDE SIGNED AND SEALED SHOP DRAWINGS AND CALCULATIONS FROM A LICENSED P.E. SHOWING ALL ATTACHMENTS NECESSARY FOR THE PROPER PERFORMANCE OF THE HURRICANE-RESISTANT WINDOWS

A0600

ARCHITECTURAL

WINDOW DETAILS, SCHEDULES, & NOTES

DOCUMENT NO: A-0000

MARK ANTHONY

ACCEP TED

DATE: 05/27/2022

ACCEPTED

DATE: 05/27/2022

ARCHITECTURAL OFFICE

19 OF 20

接受者的关注
GENERAL NOTES

1. The architect and contractors are responsible for the accuracy of the drawings. A complete set of all drawings shall be furnished to the owner before all work is started. All drawings shall be subject to change at any time during the construction without notice to the architect and contractor. All changes shall be approved in writing by the architect and contractor before any work is started.

2. All work shall be performed in accordance with the latest edition of the American National Standards Institute (ANSI) and the International Conference of Building Officials (ICBO) codes and standards. The contractor shall be responsible for all construction work and shall furnish all labor, materials, and equipment necessary to complete the work.

3. The architect shall have the authority to withhold payment for any work not in accordance with the drawings and specifications. The contractor shall be responsible for all work not in compliance with the plans and specifications.

4. The contractor shall furnish and install all electrical wiring, lighting, and fixtures in accordance with the plans and specifications.

5. All electrical work shall be inspected by the appropriate agency before the final inspection.

ELECTRICAL

GENERAL NOTES, FEMA & ZONING MAPS

GENERAL NOTES

1. The contractor shall be responsible for any electrical work not in accordance with the plans and specifications.

2. The contractor shall furnish and install all electrical wiring, lighting, and fixtures in accordance with the plans and specifications.

3. All electrical work shall be inspected by the appropriate agency before the final inspection.

FEMA MAP

1. The contractor shall be responsible for any electrical work not in accordance with the plans and specifications.

2. The contractor shall furnish and install all electrical wiring, lighting, and fixtures in accordance with the plans and specifications.

3. All electrical work shall be inspected by the appropriate agency before the final inspection.

ZONING MAP

1. The contractor shall be responsible for any electrical work not in accordance with the plans and specifications.

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3. All electrical work shall be inspected by the appropriate agency before the final inspection.

ELECTRICAL

GENERAL NOTES, FEMA & ZONING MAPS

1. The contractor shall be responsible for any electrical work not in accordance with the plans and specifications.

2. The contractor shall furnish and install all electrical wiring, lighting, and fixtures in accordance with the plans and specifications.

3. All electrical work shall be inspected by the appropriate agency before the final inspection.
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### OUTDOOR CONDENSING UNITS

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### TOILET EXHAUST FAN SCHEDULE

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### DUCT HEATER SCHEDULE

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### ENERGY RECOVERY VENTILATION UNIT SCHEDULE

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### ELECTRIC UNIT HEATER SCHEDULE

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### OUTSIDE AIR INTAKE LOUVER SCHEDULE

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### CONDENSATE PUMP SCHEDULE

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### ABBREVIATIONS

- N.H. = North Main Unit
- S.H. = South Main Unit
- B.B. = Main Building
- A.M. = Administration Building
- S.M. = Service Building
- B.B. = Main Building
- A.M. = Administration Building
- S.M. = Service Building
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- S.M. = Service Building
- B.B. = Main Building

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**Mechanical Sym., Schedules & Abbreviations**

EDGECRATER WATER VOLUNTEER FIRE DEPARTMENT

MECHANICAL

MECHANICAL SYM., SCHEDULES & ABBREVIATIONS
REVISIONS

(516) 409 - 1900
1563 BELLMORE AVE.
N.BELLMORE, NY 11710

MECHANICAL

MECHANICAL DETAILS - 2

ELECTRIC UNIT HEATER INSTALLATION DETAIL
NOT TO SCALE

NOTES:
1. PROVIDE MANUFACTURER PROVIDED SUPPORT BRACKETS
2. PROVIDE MANUFACTURER RECOMMENDED CLEARANCES FROM THE WALL AND CEILINGS

GERNERATOR VENT PIPE INSTALLATION
NOT TO SCALE

NOTES:
1. CONTRACTOR SHALL VERIFY THE EXISTING GAS LINE IN THE FLOOR
2. EACH CONNECTION TO THE PIPE SHUTOFF SHALL BE FIELD TESTED
3. GAS PIPING SHALL BE CAPPED AS PER 2014 NASH AND NEA STANDARDS

PIPE HANGERS DETAILS
NOT TO SCALE

NOTES:
1. Securly anchor the suspending rod to the building foundation

ACCU-2 AND ACCU-3 MOUNTING DETAIL
NOT TO SCALE

NOTE:
- PROVIDE CONCRETE AND DEVICES REFER TO ARCHITECTURAL DRAWINGS
- CONTRACTOR SHALL FOLLOW MANUFACTURER'S INSTRUCTIONS TO INSTALL THE CONDUIT HINGED DEVICE
ATTACHMENT E – PREVAILING WAGES & OTHER LABOR REQUIREMENTS

See attached Davis-Bacon Wage Decision

GOSR reserves the right to visit the job site and to interview any employees on any given date or time during the conduct of the work without prior notification. GOSR will ascertain that the proper wage rates are being paid to the employees in accordance with the contract documents. GOSR shall require the posting, utilization, and/or submission of the following forms or documents to verify compliance with Davis-Bacon, Prevailing Wages, and other labor requirements, which may include, but are not limited to, the following:

- Contractors shall pay the higher prevailing wage between Davis Bacon (Federal) and NYSDOL Prevailing wages. NYSDOL update periodically and it is the contractor’s responsibility to pay the most updated wages applicable for the trade being utilized in the field. NYSDOL wages can be found on the following website: https://apps.labor.ny.gov/wpp/publicViewPWChanges.do?method=showIt
- DBRA Wage Rates – This reflects proper minimum hourly compensation, including fringe benefits, which is owed workers by all contractor/subcontractor for this project. Contractors are required to post these wage rates at the job site visible to all workers and must remain in place until the project is complete.
- Employees Rights Under Davis-Bacon Act Poster – This poster will be provided by GOSR to Contractor and must be posted at the job site accompanied by the wage rates, which shall be visible to all workers.
- Equal Employment Opportunity is the Law (EEO) Poster – This poster will be provided by GOSR to Contractor, and must be posted at the job site in an area visible to all workers.
- Quarterly Employment Data Report – This report shall be provided by GOSR to Contractor and must be submitted by all contractors / subcontractors whose contracts and subcontracts exceed $10,000.00 regardless of the nature and duration of contract.
- Weekly Certified Payrolls – GOSR shall dictate the format and frequency required of contractors / subcontractors when completing certified payrolls, which must be submitted for each week during the course of the project within five (5) working days after the end of the weekly payroll period.
- Project Sign – GOSR shall provide Contractor with the Project Sign requirements, if applicable, including language, formatting, size, and other specifications to be used when preparing and installing the required project sign(s).
- Daily Work Logs – GOSR may require submission of Daily Work Logs from the Contractor for each day during the course of the project with the corresponding Pay Request.
- GOSR will ascertain that the proper wage rates are being paid to the employees in accordance with the contract documents. Apprentices may be used in any of the crafts listed in the Wage Decision, if they are currently certified in a program recognized by the Office of Apprenticeship Training, U.S. Department of Labor, providing the proper ratio between journeyman and apprentice is observed. Apprenticeship certification certificates must be supplied with the first weekly payroll upon which the apprentice’s name
appears. If they are not certified as an apprentice, they must be paid as a journeyman and used as an apprentice.

- In the event of discrepancy between the services performed and the wages paid, such discrepancy will be documented, and the Contractor will be so notified. GOSR reserves the right to withhold any payment due the Prime Contractor until such discrepancy is resolved and the necessary adjustment made.
"General Decision Number: NY20220003 03/25/2022

Superseded General Decision Number: NY20210003

State: New York

Construction Types: Building, Heavy, Highway and Residential

Counties: Bronx, Kings, New York, Queens and Richmond Counties in New York.

BUILDING & RESIDENTIAL CONSTRUCTION PROJECTS (includes single family homes and apartments up to and including 4 stories), HEAVY AND HIGHWAY CONSTRUCTION PROJECTS

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

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

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

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

Additional information on contractor requirements and worker protections under the Executive Orders is available at https://www.dol.gov/agencies/whd/government-contracts.

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ASBE0012-001 06/01/2021

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<td>Includes application of all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems...............$ 69.01</td>
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<td>HAZARDOUS MATERIAL HANDLER.......$ 39.00</td>
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BOIL0005-001 01/01/2021

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FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day, Thanksgiving Day, Memorial Day, Independence Day, Labor Day and Good Friday, Friday after Thanksgiving, Christmas Eve Day and New Year's Eve

BRNY0001-001 07/01/2020

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<tr>
<td>BRICKLAYER MARBLE POLISHERS</td>
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<td>Mason - Stone</td>
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<td>Pointer, cleaner and caulkers</td>
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<td>Marble Mason</td>
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<tbody>
<tr>
<td>Rates</td>
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</table>

<table>
<thead>
<tr>
<th>MILLWRIGHT</th>
<th>$57.00</th>
<th>54.06</th>
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<table>
<thead>
<tr>
<th>CARP1556-006 07/01/2021</th>
</tr>
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<tbody>
<tr>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Dock Builder &amp; Piledrivermen</th>
<th>$56.93</th>
<th>52.79</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>CARP1556-007 07/01/2021</th>
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</table>

<table>
<thead>
<tr>
<th>Diver Tender</th>
<th>$51.34</th>
<th>52.79</th>
</tr>
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<tbody>
<tr>
<td>Diver</td>
<td>$71.80</td>
<td>52.79</td>
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</table>

<table>
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<tbody>
<tr>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Carpenters:</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIMBERMEN:</td>
</tr>
<tr>
<td>$52.05</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ELEC0003-001 04/11/2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rates</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ELECTRICIAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricians</td>
</tr>
<tr>
<td>Jobbing, and maintenance and repair work</td>
</tr>
</tbody>
</table>

**PAID HOLIDAYS:**

a. New Years Day, Martin Luther King, Jr.'s Birthday,

-----------------------------------------------------------------------------------------------
ELEC1049-001 04/04/2021
QUEENS COUNTY

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groundman .................. $ 36.73</td>
<td>25.66</td>
</tr>
<tr>
<td>Heavy Equipment Operator .... $ 48.97</td>
<td>29.55</td>
</tr>
<tr>
<td>Lineman and Cable Splicer .... $ 61.21</td>
<td>33.43</td>
</tr>
<tr>
<td>Tree Trimmer ................ $ 30.09</td>
<td>14.12</td>
</tr>
</tbody>
</table>

-----------------------------------------------------------------------------------------------
* ELEV0001-002 03/17/2022

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevator Constructor ....... $ 75.14</td>
<td>47.446+a+b</td>
</tr>
<tr>
<td>Modernization and Repair .... $ 59.09</td>
<td>45.564+a+b</td>
</tr>
</tbody>
</table>

FOOTNOTE:


b. PAID VACATION: An employee who has worked less than 5 years shall receive vacation pay credit on the basis of 4% of his hourly rate for all hours worked; an employee who has worked 5 to 15 years shall receive vacation pay credit on the basis of 6% of his hourly rate for all hours worked; an employee who has worked 15 or more years shall receive
vacation pay credit on the basis of 8% of his hourly rate for all hours worked.

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP 1</td>
<td>$107.75</td>
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<tr>
<td>GROUP 2</td>
<td>$89.05</td>
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<tr>
<td>GROUP 3</td>
<td>$91.89</td>
</tr>
<tr>
<td>GROUP 4</td>
<td>$89.70</td>
</tr>
<tr>
<td>GROUP 5</td>
<td>$87.94</td>
</tr>
<tr>
<td>GROUP 6</td>
<td>$84.48</td>
</tr>
<tr>
<td>GROUP 7</td>
<td>$86.05</td>
</tr>
<tr>
<td>GROUP 8</td>
<td>$83.59</td>
</tr>
<tr>
<td>GROUP 9</td>
<td>$81.85</td>
</tr>
<tr>
<td>GROUP 10</td>
<td>$78.28</td>
</tr>
<tr>
<td>GROUP 11</td>
<td>$73.21</td>
</tr>
<tr>
<td>GROUP 12</td>
<td>$74.81</td>
</tr>
<tr>
<td>GROUP 13</td>
<td>$75.36</td>
</tr>
<tr>
<td>GROUP 14</td>
<td>$57.06</td>
</tr>
<tr>
<td>GROUP 15</td>
<td>$53.11</td>
</tr>
</tbody>
</table>

POWER EQUIPMENT OPERATOR (PAVEMENT-HEAVY & HIGHWAY)

- Asphalt Plants: $69.04
- Asphalt roller: $81.47
- Asphalt spreader: $83.59

POWER EQUIPMENT OPERATOR (STEEL ERECTION)

- Compressors, Welding Machines: $53.07
- Cranes, Hydraulic Cranes, 2 drum derricks, Forklifts, Boom Trucks: $88.77
- Three drum derricks: $92.36

POWER EQUIPMENT OPERATOR (UTILITY)

- Horizontal Boring Rig: $79.56
- Off shift compressors: $66.26
- Utility Compressors: $52.77

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Tower crane

GROUP 2: Rubber Tire Backhoes over 37,000 lbs, Track Backhoes, power shovel, Hydraulic clam shells, moles and
machines of a similar type

GROUP 3: Mine hoists and crane, etc. used as mine hoists

GROUP 4: Gradalls, keystones, cranes (with digging buckets), bridge cranes, trenching machines, vermeer cutter and machines of a similar nature

GROUP 5: Piledrivers, derrick boats, tunnel shovels

GROUP 6: All drills, and machines of a similar nature

GROUP 7: Back filling machines, cranes, mucking machines, dual drum pavers

GROUP 8: Mixers (concrete w/loading attachments), concrete pavers, cableways, land derricks, power house (low pressure units), concrete pumps

GROUP 9: Concrete plants, well drilling machines, stone crushers double drum hoist, power house (other than above)

GROUP 10: Concrete mixers

GROUP 11: Elevators

GROUP 12: Concrete breaking machine, Hoists (single drum), load masters, locomotive and dinkies over 10 tons

GROUP 13: Vibratory console

GROUP 14: Compressors (portable 3 or more in battery), tugger machine (caissons), well point pumps, chum drill

GROUP 15: Boilers, (high pressure, compressors (portable, single, or 2 in battery, not over 100' apart), pumps (river cofferdam and welding machines (except where arc is operated by members of local 15) push button machines, all engines irrespective of power (power pac) used to drive auxilliary equipment, air, hydraulic etc.

PREMIUMS ON CRANES (Crawler or Truck):
100' to 149' boom - add .50
150' to 249' boom - add .75
250' to 349' boom - add 1.00
350' to 450' boom - add 1.50

Premiums for Cranes on Steel Erection:
100' to 149' boom - add 1.75
150' to 249' boom - add 2.00
250' to 349' boom - add 2.25
350' to 450' boom - add 2.75
Tower crane - add 2.00

FOOTNOTE:
a. Paid Holidays: New Year's Day; Lincoln's Birthday;
Washington's Birthday; Memorial Day; Independence Day;
Labor Day; Veterans Day; Columbus Day; Election Day;
Thanksgiving Day; and Christmas Day; provided the employee
works one day the payroll week in which the holiday occurs.

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Double drum

GROUP 2: Stone derrick, cranes, hydraulic cranes, boom
trucks

GROUP 3: 4 pole Hoist, Single Drum Hoists

GROUP 4: Fork lift, house cars, plaster (platform machine),
plaster bucket, concrete pump and all other equipment used
for hoisting material

GROUP 5: Compressors, welding machines (cutting concrete
work), paint spraying, sand blasting, pumps (with the
exclusion of concrete pumps), house car (settlement basis
only), all engines irrespective of power (power pac) used
to drive auxiliary equipment, air, hydraulic, etc., boilers

Premiums for Cranes:
100'-149' boom - add 1.75
150'-249' boom - add 2.00
250'-349' boom - add 2.25
350'-450' boom - add 2.75
Tower cranes - add 2.00
FOOTNOTE:


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ENGI0015-001 07/01/2021

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP 1</td>
<td>$ 74.65</td>
</tr>
<tr>
<td>GROUP 2</td>
<td>$ 72.40</td>
</tr>
<tr>
<td>GROUP 3</td>
<td>$ 68.62</td>
</tr>
<tr>
<td>GROUP 4</td>
<td>$ 64.82</td>
</tr>
<tr>
<td>GROUP 5</td>
<td>$ 44.45</td>
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</tbody>
</table>

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Cherrypickers 20 tons and over and loaders (rubber-tired and/or tractor type with a manufacturer's rated capacity of six cubic yards and over)

GROUP 2: Rubber Tire Backhoes up to and including 37,000 lbs, Basin Machines, Groover, Mechanical Sweepers, Bobcat, Boom Truck, Barrier Transport (Barrier Mover) and machines of a similar nature, Churn Drills and machines of a similar nature, Stetco Silent Hoist and machines of a similar nature, Vac-alls, Meyers Machines, John Beam and machines of a similar nature, Ross Carriers and Travel Lifts and machines of a similar nature, Bulldozers, Scrapers, and Turn-a Pulls, Tugger Hoist (used exclusively for handling excavated material), Tractors with attachments, Hyster and Roustabout Cranes, Cherrypickers, Austin Western, Grove and machines of a similar nature, Scoopmobiles, Monorails, Conveyors, Trenchers, Loaders- Rubber-tired and Tractor, Barber Greene, Eimco Loaders and Eimco Backhoes, Mighty Midget and similar breakers and tampers, Curb and Gutter Pavers and Motor Patrol, Motor Graders and all machines of a similar nature, Locomotives ten (10) tons or under, Mini-Max, Break-Tech and machines of a similar nature, Milling Machines, robotic and demolition machines and machines of a similar nature including Bobcat, Pile Rig Rubber-tired Excavator (37,000 lbs. and under), 2 man auger

GROUP 3: Minor Equipment such as Tractors, Post Hole Diggers and Drivers, Ditch Witch (Walk Behind), Road Finishing
Machines, Rollers (five (5) tons and under), Tugger Hoists, Dual Purpose Trucks, Fork Lifts and Dempsey Dumpsters

GROUP 4: Oilers for the following equipment: (all gasoline, electric, diesel, or air operated) gradalls and concrete pumps or similarly equipment manned by two-men

GROUP 5: Oilers for the following equipment: (all gasoline, electric, diesel, or air operated) shovels, cranes (draglines), backhoes, pavers, trenching machines, gunite machines, compressors (3 or more in battery)

Premiums for Cranes:
100'-149' boom - add 1.75
150'-249' boom - add 2.00
250'-349' boom - add 2.25
350'-450' boom - add 2.75
Tower cranes add 2.00

FOOTNOTE:

ENGI0015-002 07/01/2016

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
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</thead>
<tbody>
<tr>
<td>$65.94</td>
<td>32.95</td>
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<tr>
<td>$63.98</td>
<td>32.95</td>
</tr>
<tr>
<td>$57.42</td>
<td>32.95</td>
</tr>
</tbody>
</table>

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Oiler
GROUP 2: Oilers on Crawler Cranes, Backhoes, Trenching machines, Gunite machines, Compressors (3 or more in Battery)
GROUP 3: Gradalls: Concrete Pumps, Power Houses - All equipment in same is manned by two (2) men only, Driving Truck Cranes

FOOTNOTE:
week in which the holiday occurs

<table>
<thead>
<tr>
<th>Code</th>
<th>Date</th>
<th>Location</th>
<th>Rates</th>
<th>Fringes</th>
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</thead>
<tbody>
<tr>
<td>IRO0040-002</td>
<td>07/01/2021</td>
<td>BRONX, NEW YORK, RICHMOND</td>
<td>IROWORKER, STRUCTURAL</td>
<td>$54.20 82.24</td>
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<tr>
<td>IRO0046-003</td>
<td>07/01/2021</td>
<td></td>
<td>IROWORKER METALLIC LATHERS AND REINFORCING IROWORKERS</td>
<td>$56.90 26.30</td>
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<tr>
<td>IRO0197-001</td>
<td>07/01/2021</td>
<td></td>
<td>IROWORKER STONE DERRICKMAN</td>
<td>$55.63 55.10</td>
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<tr>
<td>IRO0361-002</td>
<td>07/01/2021</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LABO0006-001</td>
<td>07/01/2016</td>
<td></td>
<td>LABORER (Cement and Concrete Workers)</td>
<td>$42.48 17.35</td>
</tr>
<tr>
<td>LABO0029-001</td>
<td>07/01/2017</td>
<td></td>
<td></td>
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# Rates and Fringes for Laborers

<table>
<thead>
<tr>
<th>Classification</th>
<th>Rate</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laborers:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy Blasters (hydraulic trac</td>
<td>47.15</td>
<td>35.49</td>
</tr>
<tr>
<td>drill)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blasters</td>
<td>46.27</td>
<td>35.49</td>
</tr>
<tr>
<td>Hydraulic Trac Drill</td>
<td>41.29</td>
<td>35.49</td>
</tr>
<tr>
<td>Jackhammers, Chippers, Spaders,</td>
<td>39.34</td>
<td>35.49</td>
</tr>
<tr>
<td>Concrete Breakers, All Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumatic Tools, Walk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behind Self-Propelled Hydraulci</td>
<td>35.17</td>
<td>35.49</td>
</tr>
<tr>
<td>Asphalt and Concrete Breaker</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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LABO0078-001 09/01/2021

<table>
<thead>
<tr>
<th>Classification</th>
<th>Rate</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORERS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BUILDING CONSTRUCTION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASBESTOS (Removal, Abatement, Encapsulation or Decontamination of asbestos); LEAD; &amp; HAZARDOUS WASTE LABORERS (Hazardous Waste, Hazardous Materials, Biochemical and Mold Remediation, HVAC, Duct Cleaning, Re-spray Fireproofing, etc)</td>
<td>38.05</td>
<td>19.35</td>
</tr>
</tbody>
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LABO0079-001 07/01/2018

<table>
<thead>
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<th>Classification</th>
<th>Rate</th>
<th>Fringes</th>
</tr>
</thead>
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<tr>
<td>LABORER (Building Construction)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demolition Laborers (Interior)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tier A</td>
<td>37.44</td>
<td>23.60</td>
</tr>
<tr>
<td>Tier B</td>
<td>26.63</td>
<td>17.57</td>
</tr>
<tr>
<td>Mason Tender/General Laborer</td>
<td>40.65</td>
<td>28.85</td>
</tr>
</tbody>
</table>

---

CLASSIFICATIONS
TIER A: Responsible for the removal of all interior petitions and structural petitions that can consist of sheet rock, block or masonry. Also, all structural slab openings for ducts, mechanical, shafts, elevators, slab openings and exterior walls where the building is not being completely demolished.

TIER B: Responsible for shoveling of debris into containers, pushing containers from the inside to the outside of the building.

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LABO0147-001 07/01/2016

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>$72.67</td>
<td>47.72</td>
</tr>
</tbody>
</table>

LABORERS (FREE AIR & TUNNEL)

Maintenance Men, Inside Muck Lock Tenders, Pump Men, Electricians, Cement Finishers, Caulkers, Hydraulic Men, Shield Men, Monorail Operators, Motor Men, Conveyor Men, Powder Carriers, Pan Men, Riggers, Chuck Tenders, Track Men Painters, Nippers, Brakemen, Cable Men, Hose Men, Grout Men, Gravel Men, Form Workers, Concrete Workers, Tunnel Laborers, Mole Nipper (one (1) Mole Sipper per Working Shaft per Shift for up to and including Two (2) Moles

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LABO0731-001 07/01/2021

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
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<td>48.48</td>
</tr>
<tr>
<td>$43.35</td>
<td>48.48</td>
</tr>
</tbody>
</table>

LABORER

Building, Heavy and Residential Construction
LABORER: (Asbestos, Lead, Hazardous Waste Removal (including soil)/CEMENT/CONCRETE

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>$43.50</td>
<td>48.48</td>
</tr>
<tr>
<td>$43.35</td>
<td>48.48</td>
</tr>
</tbody>
</table>

Paid Holidays: Labor Day and Thanksgiving Day

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LABO1010-001 07/01/2019

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>$42.98</td>
<td>43.91</td>
</tr>
</tbody>
</table>

Laborers:
HIGHWAY CONSTRUCTION
Fence Installer & Repairer
<table>
<thead>
<tr>
<th>Job Description</th>
<th>Rates</th>
<th>Fringes</th>
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</thead>
<tbody>
<tr>
<td>FORMSETTERS.............................................. 46.85</td>
<td>43.91</td>
<td></td>
</tr>
<tr>
<td>LABORERS.................................................. 42.98</td>
<td>43.91</td>
<td></td>
</tr>
<tr>
<td>Landscape Planting &amp; Maintenance..................... 42.98</td>
<td>43.91</td>
<td></td>
</tr>
<tr>
<td>Maintenance Safety Surface............................ 42.98</td>
<td>43.91</td>
<td></td>
</tr>
<tr>
<td>Slurry/Sealcoater/Play Equipment Installer........... 42.98</td>
<td>43.91</td>
<td></td>
</tr>
<tr>
<td>Small Equipment Operator (Not Operating Engineer)... 42.98</td>
<td>43.91</td>
<td></td>
</tr>
<tr>
<td>Small Power Tools Operator............................ 42.98</td>
<td>43.91</td>
<td></td>
</tr>
</tbody>
</table>

**FOOTNOTES:**

a. PAID HOLIDAYS: Memorial Day, Fourth of July, Labor Day, Columbus Day, Election Day and Thanksgiving Day, provided the employee has worked one (1) day in the calendar week in which the said holiday occurs.

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<table>
<thead>
<tr>
<th>LABO1010-002 07/01/2019</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Laborers-Asphalt Construction:</strong></td>
</tr>
<tr>
<td>Micro Paver.................. 47.45</td>
</tr>
<tr>
<td>Raker.......................... 46.85</td>
</tr>
<tr>
<td>Screedperson................ 47.45</td>
</tr>
<tr>
<td>Shoveler (Production Paving Only)........... 42.98</td>
</tr>
<tr>
<td>Small Equipment Operator (Asphalt)........... 42.98</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>PAIN0009-001 05/01/2020</th>
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</thead>
<tbody>
<tr>
<td>**GLAZIER.......................... 46.55</td>
</tr>
<tr>
<td><strong>PAINTER</strong></td>
</tr>
<tr>
<td>Painters, Drywall Finishers, Lead Abatement Worker................ 45.70</td>
</tr>
<tr>
<td>Spray, Scaffold and Sandblasting................ 48.70</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>PAIN0806-001 10/01/2021</th>
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</thead>
<tbody>
<tr>
<td><strong>Painters:</strong></td>
</tr>
<tr>
<td>Structural Steel and Bridge.................. 53.00</td>
</tr>
<tr>
<td>Rates</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td><strong>Painters:</strong></td>
</tr>
<tr>
<td>Drywall Tapers/Pointers</td>
</tr>
<tr>
<td><strong>KINGS AND QUEENS COUNTIES</strong></td>
</tr>
<tr>
<td>Plasterer</td>
</tr>
<tr>
<td>CEMENT MASON/CONCRETE FINISHER</td>
</tr>
<tr>
<td><strong>PLUMBER</strong></td>
</tr>
<tr>
<td>MECHANICAL EQUIPMENT AND SERVICE</td>
</tr>
<tr>
<td>Plumbers</td>
</tr>
<tr>
<td><strong>PLUMBER</strong></td>
</tr>
<tr>
<td>Service Fitters</td>
</tr>
<tr>
<td>Sprinkler Fitters, Steamfitters</td>
</tr>
</tbody>
</table>
Service Fitter work shall consist of all repair, service and maintenance work on domestic, commercial and industrial refrigeration, air conditioning and air cooling, stoker and oil burner apparatus and heating apparatus etc., including but not exclusively the charging, evacuation, leak testing and assembling for all machines for domestic, commercial and industrial refrigeration, air conditioning and heating apparatus. Also, work shall include adjusting, including capacity adjustments, checking and repairing or replacement of all controls and start up of all machines and repairing all defects that may develop on any system for domestic, commercial and industrial refrigeration and all air conditioning, air cooling, stoker and oil burner apparatus and heating apparatus regardless of size or type.

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**ROOF0008-003 07/01/2021**

<table>
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<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROOFER</td>
<td>$45.25</td>
</tr>
</tbody>
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**SHEE0028-002 07/29/2021**

<table>
<thead>
<tr>
<th>Rates</th>
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<tbody>
<tr>
<td>SHEET METAL WORKER</td>
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</tr>
<tr>
<td>BUILDING CONSTRUCTION</td>
<td>$51.35</td>
</tr>
<tr>
<td>RESIDENTIAL CONSTRUCTION</td>
<td>$23.84</td>
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</tbody>
</table>

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**TEAM0282-001 07/01/2020**

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
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<tbody>
<tr>
<td>TRUCK DRIVER</td>
<td></td>
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<tr>
<td>Asphalt</td>
<td>$42.68</td>
</tr>
<tr>
<td>Euclids &amp; Turnapulls</td>
<td>$45.62</td>
</tr>
<tr>
<td>High Rise</td>
<td>$53.79</td>
</tr>
</tbody>
</table>

**FOOTNOTES:**

PAID HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Election Day, Veterans' Day (Armistice Day), Thanksgiving Day, Day after Thanksgiving and Christmas Day. Employees working two (2) days in the calendar week in which a holiday falls are to be paid for such holiday, provided that they shape each remaining workday during such calendar week.
WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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

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

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

Union Rate Identifiers

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

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

Survey Rate Identifiers

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

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

Union Average Rate Identifiers

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

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

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

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

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

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

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

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

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

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

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

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

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

================================================================

END OF GENERAL DECISIO"
APPENDIX I – FEDERAL CONTRACT PROVISIONS

During the performance of the Contract, Contractor shall comply with all applicable Federal laws and regulations including, but not limited to the following:

A. CONTRACTING WITH SMALL AND MINORITY FIRMS, WOMEN’S BUSINESS ENTERPRISE AND LABOR SURPLUS AREA FIRMS (2 C.F.R. § 200.321)

Contractor shall be subject to 2 C.F.R. 200.321 and will take affirmative steps to assure that minority firms, women’s business enterprises, and labor surplus area firms are used when possible and will not be discriminated against on the grounds of race, color, religious creed, sex, or national origin in consideration for an award.

Affirmative steps shall include:

1. Placing qualified small and minority businesses and women's business enterprises on solicitation lists;
2. Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;
3. Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority business, and women's business enterprises;
4. Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority business, and women's business enterprises; and
5. Using the services/assistance of the Small Business Administration (SBA), and the Minority Business Development Agency (MBDA) of the Department of Commerce.
6. Contractor shall submit evidence of compliance with the foregoing affirmative steps when requested by GOSR.

B. ACCESS TO RECORDS & RECORD RETENTION (2 C.F.R. 200.337)

Contractor must provide GOSR, the State of New York, the U.S. Department of Housing and Urban Development (HUD), the Inspectors General, the Comptroller General of the United States, or any of their pass-through entities or authorized representatives access to any books, documents, papers, and records of the Contractor and its subcontractors which are directly pertinent to this Contract for the purposes of making and responding to audits, examinations, excerpts, and transcriptions. The right also includes timely and reasonable access to the Contractor’s personnel for the purpose of interview and discussion related to such documents. Contractor must keep records available upon request of those representatives within twenty-four (24) hours of request by GOSR. Contractor must maintain all records pertaining to the Contract for five (5) years after receiving final payment and after all other pending matters have been closed.

C. REQUIRED CONTRACT PROVISIONS IN ACCORDANCE WITH APPENDIX II TO PART 200 – CONTRACT PROVISIONS FOR NON-FEDERAL ENTITY CONTRACTS UNDER FEDERAL AWARDS (2 C.F.R. 200.327)

1. Appendix II to Part 200 (A) – Breach of Contract Remedies:
The Contract between HTFC and Contractor shall include administrative, contractual, or legal remedies in instances where Contractor violates or breaches the terms of the Contract.

2. Appendix II to Part 200 (B) – Termination for Cause and Convenience:
The Contract between HTFC and Contractor shall include provisions for termination for cause or convenience by GOSR, including the manner by which it will be effected and the basis for settlement.

3. Appendix II to Part 200 (C) – Equal Employment Opportunity:
Except as otherwise provided under 41 C.F.R. Part 60, Contractor shall comply with the following equal opportunity clause, in accordance with Executive Order 11246 of September 24, 1965 entitled “Equal Employment Opportunity,” as amended by Executive Order 11375 of October 13, 1967 and implementation regulations at 41 C.F.R. Chapter 60.

During the performance of this Contract, the Contractor agrees as follows:
The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

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

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

The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
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The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

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

The Contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or Contractor. The Contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance:

Provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or Contractor as a result of such direction by the administering agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

The Contractor further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in Federally assisted construction work: Provided, That if the Contractor so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

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

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

Contractor must include the equal opportunity clause in each of its subcontracts, and to require all subcontractors to include the equal opportunity clause in each of its subcontracts.

4. **Appendix II to Part 200 (D) – Davis-Bacon Act:**

   For any Contract in excess of $2,000 and if required by the Federal funding program, Contractor must comply with the Davis Bacon and Related Acts, and the requirements shall be applicable to any labor or mechanic work completed in connection with this Contract which fall under the Davis Bacon Act. The Contractor is required to comply with the Davis Bacon Act (40 U.S.C. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 C.F.R. part 5). In accordance with the statute, Contractor is required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, Contractor must pay wages not less than once a week.

   Contractor shall submit certified payroll of Contractor and all subcontractors on a weekly basis in the format required by GOSR. At GOSR’s request, Contractor shall make available and shall require its subcontractors to make available, copies of cancelled checks and check stubs for comparisons by GOSR or its agents.

   Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 C.F.R. Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed.

   The wage determination (including any additional classification and wage rates conformed under 29 C.F.R. Part 5.5(a)(1)(ii)) and the Davis Bacon poster (WH-1321) shall be posted at all times by the Contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

   Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following. The Statement of Compliance can be found on page 2 of the WH-347 form, and/or additional certifications of compliance may be required by GOSR. Any Statement of Compliance is subject to the penalties provided by 18 U.S.C. § 1001, namely, a fine, possible imprisonment of not more than 5 years, or both. Accordingly, the party signing the statement should have knowledge of the facts represented as true.

   Contractor must include this provision in all contracts between itself and any subcontractors in connection with the services performed under this Contract. GOSR shall report all suspected or reported violations to the Federal awarding agency, as applicable.

5. **Appendix II to Part 200 (D) – Copeland “Anti-Kickback” Act:**
Contractor shall comply with the Copeland “Anti-Kickback” Act (18 U.S.C. 874) as supplemented in Department of Labor regulations (29 C.F.R. Part 3). The Act provides that each the Contractor must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. GOSR must report all suspected or reported violations to the Federal awarding agency.


If this Contract is in excess of $100,000 and involves the employment of mechanics or laborers, Contractor shall comply with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 C.F.R. Part 5). Under 40 U.S.C. 3702, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

7. Appendix II to Part 200 (F) – Rights to Inventions Made Under Contract or Agreement:

Any discovery or invention that arises during the course of the contract shall be reported to GOSR. This clause requires the Contractor to disclose promptly inventions to GOSR (within 2 months) after the inventor discloses it in writing to Contractor personnel responsible for patent matters. The awarding agency shall determine how rights in the invention/discovery shall be allocated consistent with "Government Patent Policy" and Title 37 C.F.R. § 401.

If the Federal award meets the definition of “funding agreement” under 37 C.F.R. § 401.2(a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that “funding agreement,” the recipient or subrecipient must comply with the requirements of Title 37 C.F.R. § 401, “Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements,” and any implementing regulations issued by the awarding agency.

The regulation at 37 C.F.R. § 401.2(a) currently defines “funding agreement” as any contract, grant, or cooperative agreement entered into between any Federal agency, other than the Tennessee Valley Authority, and any contractor for the performance of experimental, developmental, or research work funded in whole or in part by the Federal government. This term also includes any assignment, substitution of parties, or subcontract of any type entered into for the performance of experimental, developmental, or research work under a funding agreement as defined in the first sentence of this paragraph.

8. Appendix II to Part 200 (G) – Clean Air Act and Federal Water Pollution Control Act:
If this Contract is in excess of $150,000, Contractor shall comply with all applicable standards, orders, or requirements issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387).

Pursuant to the Clean Air Act, (1) Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. § 7401 et seq., (2) Contractor agrees to report each violation to GOSR and understands and agrees that GOSR will, in turn, report each violation as required to assure notification to the Federal awarding agency and the appropriate Environmental Protection Agency Regional Office, and (3) Contractor agrees to include these requirements in each subcontract exceeding $150,000.

Pursuant to the Federal Water Pollution Control Act, (1) Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq., (2) Contractor agrees to report each violation to GOSR and understands and agrees that GOSR will, in turn, report each violation as required to assure notification to the Federal awarding agency and the appropriate Environmental Protection Agency Regional Office, and (3) Contractor agrees to include these requirements in each subcontract exceeding $150,000.

9. Appendix II to Part 200 (H) – Debarment and Suspension:

A contract award (see 2 C.F.R. § 180.220) must not be made to parties listed on the government wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 C.F.R. 180 that implement Executive Orders 12549 (3 C.F.R. part 1986 Comp., p. 189) and 12689 (3 C.F.R. part 1989 Comp., p. 235), “Debarment and Suspension.” SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549. SAM exclusions can be accessed at www.sam.gov.

Additionally, no contracts shall be awarded to any Contractor that has been debarred, suspended, or otherwise excluded from or ineligible for participation in any Federal programs, including but not limited to the Department of Health and Human Work (DHHS), Office of Inspector General (OIG) - List of Excluded Individuals & Entities (LEIE); U.S. General Services Administration (GSA) – Excluded Parties List System (EPLS); All States (50) Health & Human Work Commission Medicaid OIG Sanction List; Government Terrorist Watch List (OFAC / Patriot Act); Department of Commerce, Bureau of Industry and Security, Denied Persons List; and Department of Homeland Security, Immigration and Customs Enforcement (ICE) Most Wanted.

This Contract is a covered transaction for purposes of 2 C.F.R. pt. 180 and 2 C.F.R. pt. 3000. As such Contractor is required to verify that none of the Contractor, its principals (defined at 2 C.F.R. § 180.995), or its affiliates (defined at 2 C.F.R. § 180.905) are excluded (defined at 2 C.F.R. § 180.940) or disqualified (defined at 2 C.F.R. § 180.935). These regulations restrict awards, subawards, and contracts with certain parties that are debarred, suspended, or otherwise excluded from or ineligible for participation in Federal assistance programs and activities (See 2 C.F.R Part 200, Appendix II).
Contractor must comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C and must include a requirement to comply with these regulations in any lower tier covered transaction it enters into.

This certification is a material representation of fact relied upon by GOSR. If it is later determined that Contractor did not comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C, the Contractor may be subject to available remedies, including but not limited to, refunding GOSR for any payments made to the Contractor while ineligible, and also acknowledges that the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment.

Contractor warrants that it is not debarred, suspended, or otherwise excluded from or ineligible for participation in any Federal programs. Contractor also agrees to verify that all subcontractors performing work under this Contract are not debarred, disqualified, or otherwise prohibited from participation in accordance with the requirements above. Contractor further agrees to notify GOSR in writing immediately if Contractor or its subcontractors are not in compliance during the term of this Contract. GOSR reserves the right to verify Contractor’s status and document instances of debarment, suspension, or other ineligibility.

10. Appendix II to Part 200 (I) – Byrd Anti-Lobbying Amendment:

If this Contract is in excess of $100,000, Contractor shall have submitted and filed the required certification pursuant to the Byrd Anti-Lobbying Amendment (31 U.S.C. § 1353). If at any time during the Contract term funding exceeds $100,000.00, Contractor shall file with GOSR the Federal Standard Form LLL titled “Disclosure Form to Report Lobbying.” Contractors that apply or bid for an award exceeding $100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.


Contractor shall comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 C.F.R. part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds $10,000 or the value of the quantity acquired during the preceding fiscal year exceeded $10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines. In the performance of this contract, Contractor shall make maximum use of products containing recovered materials that are EPA-designated items unless the product cannot be acquired—

- Competitively within a timeframe providing for compliance with the contract performance schedule;
- Meeting contract performance requirements; or
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• At a reasonable price.

Contractor shall also comply with all other applicable requirements of Section 6002 of the Solid Waste Disposal Act.

12. Appendix II to Part 200 (K) – Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment (See 2 C.F.R. 200.216): Contractors shall not contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system funded under this Contract. As described in Public Law 115–232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).

For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

Telecommunications or video surveillance services provided by such entities or using such equipment.

See Public Law 115–232, section 889 for additional information.

13. Appendix II to Part 200 (L) – Domestic Preferences for Procurement (See 2 C.F.R. 200.322): As appropriate and to the extent consistent with law, Contractor shall, to the greatest extent practicable, purchase, acquire, or use goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subcontracts.

For purposes of this section:

“Produced in the United States” means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.

“Manufactured products” means items and construction materials composed in whole or in part of nonferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.


Section 109 of the Housing and Community Development Act of 1974 requires that no person in the United States shall on the grounds of race, color, national origin, religion, or sex be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.
made available pursuant to the Act. Section 109 also directs that the prohibitions against discrimination on the basis of age under the Age Discrimination Act and the prohibitions against discrimination on the basis of disability under Section 504 shall apply to programs or activities receiving Federal financial assistance under Title I programs. The policies and procedures necessary to ensure enforcement of section 109 are codified in 24 C.F.R. part 6.

E. FLOOD DISASTER PROTECTION ACT OF 1973 (24 C.F.R. 570.605)
Contractor must comply with the provisions in 24 C.F.R. 570.605, Section 202(a) of the Flood Disaster Protection Act of 1973 (42 U.S.C. 4106), and the regulations in 44 C.F.R. Parts 59-79.

F. LEAD-BASED PAINT (24 C.F.R. 570.608)
Contractor and its subcontractors must comply with the provisions found in 24 C.F.R. 570.608, the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. 4821-4846), the Residential Lead Based Paint Hazard Reduction Act of 1992 (U.S.C. 4851-4856), and 24 C.F.R. Part 35, subparts A, B, J, K, and R. This Article is to be included in all subcontracts, for work in connection with this Contract, which relate to residential structures.

Contractor shall comply with all Federal, State and local laws and regulations which prohibit recipients of Federal funding from discriminating against individuals with disabilities. Applicable laws and regulations with which Contractor shall comply shall include, but are not limited to, the following: Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. Section 794) (24 C.F.R. Parts 8-9); Title II of the Americans with Disabilities Act of 1990; the Architectural Barriers Act of 1968 (42 U.S.C. 4151-4157); the Uniform Federal Accessibility Standards (Appendix A to 24 C.F.R. Part 40 and Appendix A to 41 C.F.R. Part 101-19, subpart 101-19.6); the Americans with Disabilities Act (42 U.S.C. 12131; 47 U.S.C. 155, 201, 218, and 225);

For any HUD-funded housing rehabilitation, housing construction, and other public construction project with a value in excess of $200,000, contractor and subcontractors must comply with Section 3 of the Housing and Urban Development Act of 1968. The purpose of Section 3 is to ensure that employment and other economic opportunities generated by certain HUD financial assistance shall, to the greatest extent feasible, and consistent with existing Federal, State and local laws and regulations, be directed to low- and very low income persons, particularly those who are recipients of government assistance for housing, and to business concerns which provide economic opportunities to low- and very low-income persons.

Contractors shall ensure that employment, training, or subcontracting opportunities arising in connection with Section 3 projects are provided to Section 3 workers and Section 3 business concerns residing within the metropolitan area (or nonmetropolitan county) in which the project is located.

For any Section 3 covered project, contractor and subcontractors must comply with the implementing regulations under 24 C.F.R. 75.

Where feasible, priority for employment opportunities and training should be given to:
INVITATION FOR BID: Storm Hardening at Edgewater Park Volunteer Fire Department – IFB # GOSR-IFB-2022-01

1. Section 3 workers residing within the service area or the neighborhood of the project, and
2. Participants in YouthBuild programs.

To the greatest extent feasible, and consistent with existing Federal, State, and local laws and regulations, contractors and subcontractors shall ensure contracts for work awarded in connection with Section 3 projects are provided to business concerns that provide economic opportunities to Section 3 workers residing within the metropolitan area (or nonmetropolitan county) in which the project is located.

Where feasible, priority for contracting opportunities should be given to:

1. Section 3 business concerns that provide economic opportunities to Section 3 workers residing within the service area or the neighborhood of the project, and
2. YouthBuild programs.

Contractors or subcontractors that employ Section 3 workers must maintain documentation to ensure that workers meet the definition of a Section 3 worker or Targeted Section 3 worker, at the time of hire or the first reporting period. Please refer to 24 C.F.R. 75.31 regarding acceptable documentation for a Section 3 worker or Targeted Section 3 worker.

I. ENERGY EFFICIENCY (42 U.S.C. 6201)

Contractor must comply with the mandatory standards and policies relating to energy efficiency, which are contained in the State energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. 6201). Contractor must include this provision in all contracts between itself and any subcontractors in connection with services performed under this Contract.

J. FAIR LABOR STANDARDS ACT

Contractor must comply the Fair Labor Standards Act of 1938 (29 U.S.C. Section 201 et seq.) as now or hereafter amended, which regulates wage, hour and other employment practices that govern the use of funds provided and the employment of personnel under this Contract. The Contractor warrants that it will pay all its workers all monies earned by its workers including, but not limited to regular wages, any overtime compensation, or any additional payments pursuant to the Fair Labor Standards Act, 29 United States Code (U.S.C.) Section 207 9a(1), as amended; the Equal Pay Act; Title VII of the Civil Rights Act of 1964, 42 U.S.C. Section 2000, et al., as amended.

K. GREEN BUILDING STANDARDS

At a minimum, the Contractor and its subcontractors must comply with local codes and any applicable national building codes for any work involving rehabilitation or construction, including design. Contractor shall be required to comply with all requirements for Green Building Standards of the Federal awarding agency and/or pass-through entity. Pursuant to Federal Register / Vol. 81, No. 117 / Friday, June 17, 2016 / Notices, Green Building Standards must be met for:

All new construction of residential buildings; and

All replacement of substantially damaged residential buildings. Replacement of residential buildings may include reconstruction (i.e., demolishing and rebuilding a housing unit on the same lot in substantially the same manner)
and may include changes to structural elements such as flooring systems, columns, or load bearing interior or exterior walls.

Green Building Standards mean construction that must meet an industry-recognized standard that has achieved certification under at least one of the following programs:

1. ENERGY STAR (Certified Homes or Multifamily High-Rise)
2. Enterprise Green Communities
3. LEED (New Construction, Homes, Midrise, Existing Buildings Operations and Maintenance, or Neighborhood Development)
4. ICC–700 National Green Building Standard
5. EPA Indoor AirPlus (ENERGY STAR a prerequisite)
6. Any other equivalent comprehensive green building program

Residential buildings include single-family properties, multifamily properties, or both. All rehabilitation, reconstruction, and new construction should be designed to incorporate principles of sustainability, including water and energy efficiency, resilience, and mitigating the impact of future disasters.

L. NON-COLLUSION (THE SHERMAN ACT)

Contractor must comply with the requirements of The Sherman Act, which prohibits collusion. Collusion occurs when two persons or representatives of an entity or organization make an agreement to deceive or mislead another. Such agreements are usually secretive and involve fraud or gaining an unfair advantage over a third party, competitors, consumers or others with whom they are negotiating. The collusion, therefore, makes the bargaining process inherently unfair. Collusion can involve promises of future benefits, price or wage fixing, kickbacks, or misrepresenting the independence of the relationship between the colluding parties.

The Sherman Act prohibits any agreement among competitors to fix prices, rig bids, or engage in other anticompetitive activity. Collusion, bid rigging, or other anticompetitive activity is considered a felony.

Contractor shall not in any way, directly or indirectly:

- Collude, conspire, or agree with any other person, firm, corporation, Bidder or potential Bidder to the amount of this Bid or the terms or conditions of this Bid.
- Pay or agree to pay any other person, firm, corporation Bidder or potential Bidder any money or anything of value in return for assistance in procuring or attempting to procure a contract or in return for establishing the prices in the attached Bid or the Bid of any other Bidder.
- Assemble in coordination with any other organization in an attempt to fix the price of the work.
- Contractor is expected to report any suspected fraud, collusion, or impropriety from the inception of solicitation through the end of the Contract term.

M. NON-SEGREGATED FACILITIES

“Prohibition of Segregated Facilities”

Segregated facilities means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or
entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit
directive or are in fact segregated on the basis of race, color, religion, sex, sexual orientation, gender identity, or
national origin because of written or oral policies or employee custom. The term does not include separate or single-
user rest rooms or necessary dressing or sleeping areas provided to assure privacy between the sexes.

Sexual orientation has the meaning given by the Department of Labor’s Office of Federal Contract Compliance
Programs, and is found at www.dol.gov/ofccp/LGBT/LGBT_FAQs.html.

The Contractor agrees that it does not and will not maintain or provide for its employees any segregated facilities
at any of its establishments, and that it does not and will not permit its employees to perform their services at any
location under its control where segregated facilities are maintained. The Contractor agrees that a breach of this
clause is a violation of the Equal Opportunity clause in this contract.

The Contractor shall include this clause in every subcontract and purchase order that is subject to the Equal
Opportunity clause of this Contract.

N. WHISTLEBLOWER PROTECTION ACT

Contractor, subcontractors, and employees working on this Project shall be subject 41 U.S. Code § 4712, which
requires that an employee of a contractor, subcontractor, grantee, or subgrantee or personal services contractor may
not be discharged, demoted, or otherwise discriminated against as a reprisal for disclosing information that the
employee reasonably believes is evidence of gross mismanagement of a Federal contract or grant, a gross waste of
Federal funds, an abuse of authority relating to a Federal contract or grant, a substantial and specific danger to
public health or safety, or a violation of law, rule, or regulation related to a Federal contract (including the
competition for or negotiation of a contract) or grant.

The Contractor shall inform its employees and subcontractors in writing, in the predominant language of the
workforce, of employee whistleblower rights and protections under 41 U.S.C. 4712, as described in section 3.908
of the Federal Acquisition Regulation. The Contractor shall insert the substance of this clause, including this
paragraph, in all subcontracts providing services for this Project.

O. MISCELLANEOUS PROVISIONS

Program Fraud & False or Fraudulent Statements or Related Acts: Contractor acknowledges that 31 U.S.C. Chapter
38 (Administrative Remedies for False Claims and Statements) applies to the Contractor’s actions pertaining to this
Contract.

No Obligation by Federal Government: The Federal Government is not a party to this Contract and is not subject
to any obligations or liabilities to GOSR, Contractor, any subcontractors or any other party pertaining to any matter
resulting from the Contract.
CERTIFICATION REGARDING LOBBYING

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

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

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

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

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

Organization: __________________________________________

Street address: _________________________________________

City, State, Zip: _________________________________________

CERTIFIED BY: ____________________________

(type or print)

TITLE: _________________________________________

_________________________________________ (signature) ___________________________ (date)
### Disclosure of Lobbying Activities

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure)

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<td>a. contract</td>
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**For material change only:**
Year _______ quarter _______
Date of last report________

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<td><strong>4. Name and Address of Reporting Entity:</strong></td>
<td><strong>5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime:</strong></td>
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**6. Federal Department/Agency:**

**7. Federal Program Name/Description:**

CFDA Number, if applicable: __________________

**8. Federal Action Number, if known:**

**9. Award Amount, if known:**

$ 

**10. a. Name and Address of Lobbying Registrant (if individual, last name, first name, MI):**

**b. Individuals Performing Services (including address if different from No. 10a) (last name, first name, MI):**

**11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.**

Signature: __________________

Print Name: __________________

Title: __________________

Telephone No.: ______________ Date: ______
INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.

2. Identify the status of the covered Federal action.

3. Identify the appropriate classification of this report. If this is a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.

4. Enter the full name, address, city, State and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.

5. If the organization filing the report in item 4 checks “Subawardee,” then enter the full name, address, city, State and zip code of the prime Federal recipient. Include Congressional District, if known.

6. Enter the name of the federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.

7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.

8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitations for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Included prefixes, e.g., “RFP-DE-90-001.”

9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.

10. (a) Enter the full name, address, city, State and zip code of the lobbying registrant under the Lobbying Disclosure Act of 1995 engaged by the reporting entity identified in item 4 to influence the covered Federal action.

(b) Enter the full names of the individual(s) performing services, and include full address if different from 10(a). Enter Last Name, First Name, and Middle Initial (MI).

11. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB control Number. The valid OMB control number for this information collection is OMB No. 0348-0046. Public reporting burden for this collection of information is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, DC 20503
APPENDIX II – STANDARD CLAUSES FOR CONTRACTS WITH HTFC
RESPONDENT OVERVIEW

Invitation for Bid

For

Respondent Organization Legal Name:
D/B/A (if applicable):
Address:
City, State, Zip,
County:
Contact Person:
Title:
Telephone
e: Fax:
E-mail:
FedID#:
Certified M/WBE: ___Yes ___ No (if yes, include copy of New York State Certificate)
NYS Charities Registration No. (if not-for-profit)
Legal Status: _Corporation _Partnership _ Not-for-Profit _ Other (Please specify), ________

Include evidence of filing of certificate if conducting business under an assumed name or as partner (i.e. Doing Business As) (General Business Law § 130)

RESPONDENT CERTIFICATION

Respondent certifies that to the best of its knowledge and belief, all information contained in this application is true and correct.

Authorized Signature: ______________________
Print Name: ______________________
Title: ______________________
APPENDIX II

STANDARD CLAUSES FOR CONTRACTS WITH THE

NEW YORK STATE HOUSING FINANCING AGENCY
STATE OF NEW YORK MORTGAGE AGENCY
NEW YORK STATE AFFORDABLE HOUSING CORPORATION
STATE OF NEW YORK MUNICIPAL BOND BANK AGENCY
TOBACCO SETTLEMENT FINANCING CORPORATION
HOUSING TRUST FUND CORPORATION
(individually or collectively, “Agency” or “Agencies”)
STANDARD CLAUSES FOR AGENCY CONTRACTS

The parties to the attached contract, license, lease, amendment or other agreement of any kind (hereinafter, "Contract") agree to be bound by the following clauses which are hereby made a part of the Contract (the word "Contractor" herein refers to any party other than the State of New York ("State"), whether a contractor, licensor, licensee, lessee or any other party):

1. ACCOUNTING RECORDS. The Contractor shall establish and maintain complete and accurate books, records, documents, accounts and other evidence directly pertinent to performance of work done for the Agency or Agencies under this Contract (hereinafter, collectively, "the Records") consistent with generally accepted bookkeeping practices. The Records must be kept for the balance of the calendar year in which they were made and for six (6) additional years thereafter. The Agency or Agencies involved in this Contract and any person or entity authorized to conduct an examination shall have access to the Records during normal business hours at an office of the Contractor within the State of New York or, if no such office is available, at a mutually agreeable and reasonable venue within the State, for the term specified above for the purposes of inspection, auditing and copying. The Agency or Agencies shall take reasonable steps to protect from public disclosure any of the Records which are exempt from disclosure under Section 87 of the Public Officers Law (the "Statute") provided that: (i) the Contractor shall timely inform the Agencies' Senior Vice President and Counsel, in writing, that said records should not be disclosed; and (ii) said records shall be sufficiently identified; and (iii) designation of said records as exempt under the Statute is reasonable. Nothing contained herein shall diminish, or in any way adversely affect, the Agency’s or Agencies’ right to discovery in any pending or future litigation.

2. CONFLICTS OF INTEREST. The Contractor shall not accept any engagement in conflict with the Agency’s or Agencies’ interest in the subject matter of this Contract.

The Servicer shall not offer to any employee, member or director of the Agency or Agencies’ any gift, whether in the form of money, service, loan, travel, entertainment, hospitality, thing or promise, or in any other form, under circumstances in which it could reasonably be inferred that the gift was intended to influence said employee, member or director, or could reasonably be expected to influence said employee, member or director, in the performance of the official duty of said employee, member or director or was intended as a reward for any official action on the part of said employee, member or director.

3. SUBCONSULTANTS. The Contractor shall not employ, contract with, or use the services of any consultant for the work of this Contract (except such third parties which may be used by the Contractor in the normal course of business, such as couriers, imaging services, etc.) without obtaining the prior written approval of the Agency or Agencies.

4. NON-ASSIGNABILITY. This Contract may not be assigned by the Contractor or its right, title or interest therein assigned, transferred, conveyed, sublet or disposed of without the previous consent in writing of the Agency or Agencies and any attempts to assign the Contract without the Agency or Agencies’ written consent are null and void. However, this Contract shall be binding upon and inure to the benefit of the Agency or Agencies and its successors and assigns.

5. INDEMNITY. The Contractor shall indemnify and hold the Agency or Agencies and their employees, officers, Members and Directors (collectively, the “Indemnities”) harmless from and against all claims, demands, liability, loss, cost, damage or expense, including attorney's fees, which may be incurred by the Indemnities because of negligence or malfeasance on the part of the Contractor arising out of this Contract.

6. NON-DISCRIMINATION. To the extent required by Article 15 of the Executive Law (also known as the Human Rights Law) and all other State and Federal statutory and constitutional non-discrimination provisions, the Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, sex (including gender identity or expression), national origin, sexual orientation, military status, age, disability, predisposing genetic characteristics, marital status or domestic violence victim status. If this a building service contract as defined in Section 230 of the Labor Law, then, in accordance with Section 239 thereof, Contractor agrees that neither it nor its subcontractors shall by reason or race, creed, color, national origin, age, sex or disability: (a) discriminate in hiring against any New York State citizen who is qualified and available to perform the work; or (b) discriminate against or intimidate any employee hired for the performance of work under this Contract. Contractor is subject to fines of $50 per person per day for any violation of Section 239 as well as possible termination of this Contract and forfeiture of all moneys due hereunder for a second or subsequent violation.

If directed to do so by the State Commissioner of Human Rights (“Commissioner”), the Contractor will send to each labor union to which the Contractor is bound a notice provided by the Commissioner advising of this provision. The Servicer will keep posted in conspicuous places notices of the Commissioner regarding
laws against discrimination. The Contractor will state in all advertisements for employees that all qualified applicants will be afforded equal opportunities without discrimination because of race, creed, color, sex, national origin, sexual orientation, age, disability, genetic predisposition or carrier status, or marital status.

If the Contractor has fifteen or more employees, it is an unlawful employment practice for the Contractor to fail or refuse to hire or to discharge any individual, or otherwise to discriminate against any individual with respect to the individual’s compensation, terms, conditions, or privileges of employment, or to limit, segregate, or classify employees or applicants for employment in any way which would deprive or tend to deprive any individual of employment opportunities or otherwise adversely affect an individual’s status as an employee, because of such individual’s race, color, religion, sex, or national origin, or because an individual opposed any practice made unlawful by Title VII of the Civil Rights Act of 1964, as amended, or because he or she made a charge, testified, assisted, or participated in any manner in an investigation, proceeding, or hearing under that Title; and that it shall be an unlawful employment practice to print or publish or cause to be printed or published any notice or advertisement relating to employment indicating any preference, limitation, specification, or discrimination on the basis of race, color, religion, sex, or national origin.

If the Contractor has fifteen or more employees, the Contractor: (1) will make and keep such records relevant to the determinations of whether unlawful employment practices have been or are being committed; (2) will preserve such records for such periods as the Equal Employment Opportunity Commission ("EEOC") shall prescribe by regulation; (3) will make such reports therefrom as the EEOC shall prescribe by regulation or order; (4) must post and keep posted in conspicuous places upon its premises where notices to employees and applicants for employment are customarily posted a notice prepared or approved by the EEOC setting forth excerpts from, or summaries of, pertinent provisions of Title VII of the Civil Rights Act of 1964, as amended, and information pertinent to the filing of a complaint.

To the extent required by Article 15 of the Executive Law (also known as the Human Rights Law) and all other State and Federal statutory and constitutional non-discrimination provisions, the Contractor will comply with all non-discriminatory employment practices, will furnish all information deemed necessary by the Commissioner, and will permit the Commissioner access to its records to ascertain compliance. The Contractor will bind all subcontractors hired to perform services in connection with this Contract to the requirements of this section, take such action for enforcement as the Commissioner may direct, and notify the Commissioner if such action results in litigation. This Contract may be terminated by the Agency or Agencies upon the Commissioner’s finding of non-compliance with this section, and the Contractor may be declared ineligible for future contracts with an agency of the State or a public authority until the Contractor satisfies the Commissioner of compliance.

7. EQUAL EMPLOYMENT OPPORTUNITIES FOR MINORITIES AND WOMEN. In accordance with Section 312 of the Executive Law and 5 NYCRR 143, if this Contract is: (i) a written agreement or purchase order instrument, providing for a total expenditure in excess of $25,000.00, whereby the Agency or Agencies, is committed to expend or does expend funds in return for labor, services, supplies, equipment, materials or any combination of the foregoing, to be performed for, or rendered or furnished to the Agency or Agencies, then the following shall apply and by signing this agreement the Contractor certifies and affirms that it is Contractor’s equal employment opportunity policy that:

(a) the Contractor will not discriminate against employees or applicants for employment because of race, creed, color, national origin, sex, age, disability or marital status, shall make and document its conscientious and active efforts to employ and utilize minority group members and women in its work force on Agency or Agencies’ contracts and will undertake or continue existing programs of affirmative action to ensure that minority group members and women are afforded equal employment opportunities without discrimination. Affirmative action shall mean recruitment, employment, job assignment, promotion, upgradings, demotion, transfer, layoff, or termination and rates of pay or other forms of compensation;

(b) at the request of the Agency or Agencies, the Contractor shall request each employment agency, labor union, or authorized representative of workers with which it has a collective bargaining or other agreement or understanding, to furnish a written statement that such employment agency, labor union or representative will not discriminate on the basis of race, creed, color, national origin, sex, age, disability or marital status and that such union or representative will affirmatively cooperate in the implementation of the Contractor's obligations herein; and

(c) the Contractor shall state, in all solicitations or advertisements for employees, that, in the performance of this Contract, all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex, age, disability or marital status.
Contractor will include the provisions of ‘a’, “b”, and “c” above, in every subcontract. Section 312 does not apply to: (i) work, goods or services unrelated to this Contract; or (ii) employment outside New York State. The Agency or Agencies shall consider compliance by a Contractor or subcontractor with the requirements of any federal law concerning equal employment opportunity which affects the purpose of this section. The Agency or Agencies shall determine whether the imposition of the requirements of the provisions hereof duplicate or conflict with any such federal law and if such duplication or conflict exists, the Agency or Agencies shall waive the applicability of Section 312 to the extent of such duplication or conflict. Contractor will comply with all duly promulgated and lawful rules and regulations of the Department of Economic Development’s Division of Minority and Women’s Business Development pertaining hereto.

(d) If the procurement of the goods or services provided herein is subject to minority and women-owned participation requirements pursuant to Article 15-A of the Executive Law, the Contractor shall be liable to the Agency or Agencies for liquidated or other appropriate damages. Such liquidated damages shall be calculated as an amount equaling the difference between: (1) all sums identified for payments to MWBEs had the Contractor achieved the contractual MWBE goals; and (2) all sums actually paid to MWBEs for work performed or materials supplied under this Contract. This Contract may provide for other appropriate remedies on account of such breach in the event it is found that the Contractor willfully and intentionally failed to comply with the minority and women-owned participation requirements set-forth in Article 15-A of the Executive Law.

8. PROPRIETARY INFORMATION. All memoranda, analyses, spreadsheets and other pertinent documents or writings, including reports and financial statements developed or prepared by, or for, the Contractor in connection with the performance of this Contract are “Proprietary Information” and shall be, and remain, the property of the Agency or Agencies. All original documents constituting Proprietary Information shall be delivered to the Agency or Agencies by the Contractor, or any subcontractor, or any other person possessing them, upon the termination of this Contract or upon the earlier request of the Agency or Agencies, except that the Contractor may retain copies for its files. Proprietary Information may not be utilized, disclosed or otherwise made available to other persons by the Contractor without the prior written approval of the Agencies’ Senior Vice President and Counsel. The provisions of this section shall be in addition to, and not in derogation of, any duty imposed upon the Contractor by any law, regulation or rule governing professional conduct respecting confidentiality.

9. IDENTIFYING INFORMATION AND PRIVACY NOTIFICATION. (a) FEDERAL EMPLOYER IDENTIFICATION NUMBER and/or FEDERAL SOCIAL SECURITY NUMBER. All invoices submitted for payment for the sale of goods or services or the lease of real or personal property to the Agency or Agencies must include the payee's identification number, i.e., the seller's or lessor's identification number. The number is either the payee's Federal employer identification number or Federal social security number, or both such numbers when the payee has both such numbers. Failure to include this number or numbers may delay payment. Where the payee does not have such number or numbers, the payee, on its invoice, must give the reason or reasons why the payee does not have such number or numbers.

(b) PRIVACY NOTIFICATION. (1) The authority to request the above personal information from a seller of goods or services or a lessor of real or personal property, and the authority to maintain such information, is found in Section 5 of the State Tax Law. Disclosure of this information by the seller or lessor to the Agency or Agencies is mandatory. The principal purpose for which the information is collected is to enable the State to identify individuals, businesses and others who have been delinquent in filing tax returns or may have understated their tax liabilities and to generally identify persons affected by the taxes administered by the Commissioner of Taxation and Finance. The information will be used for tax administration purposes and for any other purpose authorized by law. (2) The personal information is requested by Agency or Agencies to purchase the goods or services or lease the real or personal property covered by this Contract or lease. The information is maintained by Disbursement Manager at the Agency or Agencies, 641 Lexington Avenue, New York, New York 10022, under the name “Vendor Federal Social Security and Federal Employee Identification Numbers.”

10. CONTRACTUAL RELATIONSHIP. It is expressly understood that the relationship between the Agency or Agencies and the Contractor is an independent contractual relationship and neither the Contractor, its employees, nor its subcontractors shall be considered employees of the Agency or Agencies for any purpose. Please refer to the following link on the Agency’s web site to view each of the Agency’s Prompt Payment Policies at http://www.nyshcr.org/AboutUs/Procurement/Contractinformation.htm or call the Agencies’ Contract Officer at (212) 688-4000.

11. ENTIRE AGREEMENT. This Contract constitutes the entire agreement between the Contractor and the Agency or Agencies with respect to the subject matter hereof, superseding all negotiations, prior discussions and preliminary agreements. In the event of a conflict between the terms of the Contract (including any and all
12. **Modification.** Waiver, discharge, amendment, supplement, extension or other modification of this Contract shall be subject to prior approval by the Agency or Agencies and may be effected only by an instrument in writing signed by the parties to this Contract.

13. **Section Headings.** The caption of sections in this Contract are inserted solely for convenience of reference and are not intended to define, limit, or describe the scope of this Contract or any provision hereof or to otherwise affect this Contract in any way. The section headings shall not be considered in any way in construing this Contract.

14. **Counterparts.** This Contract may be executed in any number of counterparts. Each such counterpart shall be deemed to be a duplicate original. All such counterparts shall constitute but one and the same instrument.

15. **Governing Law.** This Contract has been executed and delivered in, and shall be construed and enforced in accordance with the laws of, the State of New York. In the event of conflict between New York State law and federal laws and regulations, the latter shall prevail.

16. **Notices.** All notices and other communications given hereunder shall not be effective for any purpose whatsoever unless in writing and delivered by hand or mailed by United States first class registered or certified mail, return receipt requested. Notice shall be deemed to have been given, if delivered by hand, when actually received by the party being notified, or, if mailed, when addressed (a) if to the Contractor, to the attention of the Contractor’s authorized signatory of this Contract at the address specified for the Contractor on page one of this Contract, or at such other address as to which the Contractor shall have notified the Agency or Agencies, and (b) if to the Agency or Agencies, to the attention of the Senior Vice President and Counsel, at the address for the Agency or Agencies on page one this Contract, or at such other address of which the Agency or Agencies shall have notified the Contractor.

17. **Severability.** All rights, powers and remedies provided herein may be exercised only to the extent that they do not violate any applicable law, and are intended to be limited to the extent necessary so that they will not render this Contract invalid, unenforceable or not entitled to be recorded, registered, or filed under applicable law. If any provision or term of this Contract or any portion of a provision shall be held to be invalid, illegal or unenforceable, only such provision or part thereof shall be affected by such holding and this Contract shall be construed as if such invalid, illegal or unenforceable provision or part thereof had not been contained herein.

18. **Workers’ Compensation.** This Contract shall be void and of no force and effect unless the Contractor shall provide and maintain coverage during the life of this Contract for the benefit of such employees as are required to be covered by the provisions of the Workers’ Compensation Law.

19. **No Arbitration.** Disputes involving this Contract, including the breach or alleged breach thereof, may not be submitted to binding arbitration (except where statutorily authorized), but must, instead, be heard in a court of competent jurisdiction of the State of New York.

20. **Service of Process.** In addition to the methods of service allowed by the State Civil Practice Law & Rules (“CPLR”), the Contractor hereby consents to service of process upon it by registered or certified mail, return receipt requested. Service of process hereunder shall be complete upon the Contractor’s actual receipt of process or upon the Agency’s or Agencies’ receipt of the return thereof by the United States Postal Service as refused or undeliverable. The Contractor must promptly notify the Agency or Agencies, in writing, of each and every change of address to which service of process can be made. Service of process by the Agency or Agencies to the last known address shall be sufficient. The Contractor will have thirty (30) calendar days after service hereunder is complete in which to respond.

21. **Non-Collusive Bidding Certification.** If this Contract was awarded based upon the submission of a bid or proposal, the Contractor affirms, under penalty of perjury, that the prices in its bid or proposal were arrived at independently, without collusion, consultation, communication, or agreement, for the purpose of restricting competition, or as to any matter relating to such prices with any other Contractor or with any competitor. The Contractor further affirms that, at the time the Contractor submitted its bid or proposal, an authorized and responsible person executed and delivered a non-collusive bidding certification to the Agency or Agencies on the Contractor’s behalf.

22. **Lobbying Reform Law Disclosure.** If the procurement of the goods or services provided herein were applicable to Lobbying Reform Law Disclosure as pursuant to State Finance Law §§139-j and 139-k, the Agency or Agencies reserves the right to terminate this Contract in the event it is found that the certification filed by the Offerer/Bidder in accordance with New York State lobbying regulations is not properly completed, accurate, or certified.
York State Finance Law §139-k was intentionally false or intentionally incomplete. Upon such finding, the Agency or Agencies may exercise their termination right by providing written notification to the Contractor.

23. MACBRIDE FAIR EMPLOYMENT PRINCIPLES. In accordance with the MacBride Fair Employment Principles (Chapter 807 of the Laws of 1992), the Contractor hereby stipulates that the Contractor either (a) has no business operations in Northern Ireland, or (b) shall take lawful steps in good faith to conduct any business operations in Northern Ireland in accordance with the MacBride Fair Employment Principles (as described in Section 165 of the New York State Finance Law), and shall permit independent monitoring of compliance with such principles.

24. OMNIBUS PROCUREMENT ACT OF 1992. It is the policy of New York State to maximize opportunities for the participation of New York State business enterprises, including minority and women-owned business enterprises as bidders, subcontractors and suppliers on its procurement contracts.

Information on the availability of New York State subcontractors and suppliers is available from:

NYS Department of Economic Development
Division for Small Business
Albany, New York 12245
Phone: 518-292-5100  Fax: 518-292-5884
Email: opa@esd.ny.gov

A directory of certified minority and women-owned business enterprises is available from:

NYS Department of Economic Development
Division of Minority and Women's Business Development
633 Third Avenue
New York, New York 10017
Phone: 212-803-2424
Email: mwbecertification@esd.ny.gov

The Omnibus Procurement Act of 1992 requires that by signing this bid proposal or Contract, as applicable, Contractors certify that whenever the total bid amount is greater than $1 million:

(a) The Contractor has made reasonable efforts to encourage the participation of New York State Business Enterprises as suppliers and subcontractors, including certified minority and women-owned business enterprises, on this project, and has retained the documentation of these efforts to be provided upon request to the State;
(b) The Contractor has complied with the Federal Equal Opportunity Act of 1972 (P.L. 92-261), as amended;
(c) The Contractor agrees to make reasonable efforts to provide notification to New York State residents of employment opportunities on this project through listing any such positions with the Job Service Division of the New York State Department of Labor, or providing such notification in such manner as is consistent with existing collective bargaining contracts or agreements. The Contractor agrees to document these efforts and to provide said documentation to the State upon request; and
(d) The Contractor acknowledges notice that the State may seek to obtain offset credits from foreign countries as a result of this Contract and agrees to cooperate with the State in these efforts.

25. GENERAL RESPONSIBILITY LANGUAGE. The Contractor shall at all times during Contract term remain responsible. The Contractor agrees, if requested by the Agencies, to present evidence of its continuing legal authority to do business in New York State, integrity, experience, ability, prior performance, and organizational and financial capacity.

For purposes of this Agreement, Contractor responsibility generally means that the Contractor has the integrity to justify the award of public dollars and the capacity to perform the requirements of this Contract fully. In connection herewith, to the extent that the Agencies may make certain determinations with respect to Contractor responsibility, wherein the Agencies determine whether it has reasonable assurances that a Contractor is responsible, is an important part of the procurement process, promoting fairness in contracting, mitigating contract issues, and protecting the Contractor and the Agencies against failed contracts. In making such a responsibility determination, the Agencies shall evaluate the Contractor’s responsibility with respect to four factors: (a) financial and organizational capacity; (ii) legal authority to do business in New York State; (c) integrity; and (iv) previous performance.

26. SUSPENSION OF WORK (for Non-Responsibility). The Agencies reserve the right to suspend any or all activities under this Contract, at any time, when the Agency discovers information that calls into question the responsibility of the Contractor. In the event of such suspension, the Contractor will be given written notice outlining the particulars of such suspension. Upon issuance of such notice, the Contractor must comply with the terms of the suspension order. Contract activity may resume at such time as the Agencies issue a written notice authorizing a resumption of performance under the Contract.
27. **Termination (for Non-Responsibility).** Upon written notice to the Contractor, and a reasonable opportunity to be heard with appropriate Agency staff, the Contract may be terminated by the Agencies at the Contractor’s expense where the Contractor is determined by the Agencies to be non-responsible. In such event, the Agencies may complete the contractual requirements in any manner they deem advisable and pursue available legal or equitable remedies for breach.

28. **Iran Divestment Act.** By entering into this Agreement, Contractor certifies in accordance with State Finance Law §165-a that it is not on the “Entities Determined to be Non-Responsive Bidders/Offerers pursuant to the New York State Iran Divestment Act of 2012” (“Prohibited Entities List”) posted at: http://www.ogs.ny.gov/about/regs/docs/ListofEntities.pdf

Contractor further certifies that it will not utilize on this Contract any subcontractor that is identified on the Prohibited Entities List. Contractor agrees that should it seek to renew or extend this Contract, it must provide the same certification at the time the Contract is renewed or extended. Contractor also agrees that any proposed Assignee of this Contract will be required to certify that it is not on the Prohibited Entities List before the contract assignment will be approved by the Agency.

During the term of the Contract, should the Agency receive information that a person (as defined in State Finance Law §165-a) is in violation of the above-referenced certifications, the Agency will review such information and offer the person an opportunity to respond. If the person fails to demonstrate that it has ceased its engagement in the investment activity which is in violation of the Act within 90 days after the determination of such violation, then the Agency shall take such action as may be appropriate and provided for by law, rule, or contract, including, but not limited to, imposing sanctions, seeking compliance, recovering damages, or declaring the Contractor in default.

The Agency reserves the right to reject any bid, request for assignment, renewal or extension for an entity that appears on the Prohibited Entities List prior to the award, assignment, renewal or extension of a contract, and to pursue a responsibility review with respect to any entity that is awarded a contract and appears on the Prohibited Entities list after contract award.

29. **Affordable Care Act.** It is the sole responsibility of the Contractor to provide and maintain all Affordable Care Act (“ACA”) requirements/benefits. The ACA mandates employers with 50 or more full-time equivalents to offer coverage to full-time employees and their dependents or pay taxes if an employee obtains Exchange coverage and a premium tax credit1. Employees of the Contractor providing services to the Agency or Agencies are employees of the Contractor and are not employed by the Agency or Agencies nor the State of New York.

30. **Obligations, Representations and Warranties.** The Contractor warrants that it, its staff, and any and all subcontractors, if any, have all the necessary licenses, approvals, and certifications currently required by the laws of any applicable local, state, or Federal government to perform the services or work, as applicable, pursuant to this Agreement and/or any subcontract entered into under this Agreement. The Contractor further agrees that such required licenses, approvals, and certificates shall be kept in full force and effect during the term of this Agreement, or any extension thereof, and to secure any new licenses, approvals, or certificates within the required time frames and/or to require its staff and subcontractors, if any, to obtain the requisite licenses, approvals, or certificates. In the event the Contractor, its staff, and/or subcontractors, if any, are notified of a denial or revocation of any license, approval, or certification to perform the services or work, as applicable, under this Agreement, the Contractor shall immediately notify the Agency or Agencies.

31. **Internet Services.** In accordance with the requirements of Executive Order No. 175, Contractor certifies that it will adhere to net neutrality principles if this contract is for the provision of internet services, regardless of delivery method, to all end users in New York State, unless the President/CEO of the Agency or Agencies, or their designee, determines that adherence to net neutrality principles for a particular purpose is not in the best interests of the State. Nothing in this provision supersedes any obligation or authorization a provider of broadband Internet access service may have to address the needs of emergency communications or law enforcement, public safety, or national security authorities, consistent with or as permitted by applicable law, or limits the provider’s ability to do so. As used herein, “net neutrality” means that Contractor will not block, throttle, or prioritize internet content or applications or require that end users pay different or higher rates to access specific types of content or application.

---

1 Exchange coverage allows you to use the State’s insurance exchange marketplace to obtain coverage from competing private health care providers.
APPENDIX A
Affirmation of Understanding of
and Agreement Pursuant to
State Finance Law §139-j (3) and §139-j (6) (b)

Offerer affirms that it understands and agrees to comply with the procedures of the DHCR/HTFC relative to permissible Contacts as required by State Finance Law §§ 139-j (3) and 139-K (6) (b).

Signature: ___________________________ Date: ___________________________
Print Name: ___________________________
Title: ________________________________
Contractor Name: ______________________
Contractor Address: _______________________

Certification of Compliance
With State Finance Law §139-k (5)

Offerer certifies that all information provided to the DHCR/HTFC with respect to State Finance Law §139-k is complete, true, and accurate.

Signature: ___________________________ Date: ___________________________
Print Name: ___________________________
Title: ________________________________
Contractor Name: ______________________
Contractor Address: ______________________
APPENDIX B
Offerer Disclosure of
Prior Non-Responsibility Determinations

Name of Individual or Entity Seeking to Enter into the Procurement Contract:

Address: __________________________________________

Name and Title of Person Submitting this Form: _______________________

Contract Procurement Number: _________________________________

Date: ___________________________

1. Has any Governmental Entity made a finding of non-responsibility regarding the individual or entity seeking to enter into the Procurement Contract in the previous four years? (Please circle):
   No    Yes

   If yes, please answer the next questions:

2. Was the basis for the finding of non-responsibility due to a violation of State Finance Law §139-j (Please circle):
   No    Yes

3. Was the basis for the finding of non-responsibility due to the intentional provision of false or incomplete information to a Governmental Entity? (Please circle):
   No    Yes

4. If you answered yes to any of the above questions, please provide details regarding the finding of non-responsibility below.

   Governmental Entity: __________________________________________

   Date of Finding of Non-responsibility: ______________________________

   Basis of Finding of Non-Responsibility:
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________

   (Add additional pages as necessary)

5. Has any Governmental Entity or other governmental agency terminated or withheld a Procurement Contract with the above-named individual or entity due to the intentional provision of false or incomplete information? (Please circle):
   No    Yes
6. If yes, please provide details below.

Governmental Entity: ____________________________________________

Date of Termination or Withholding of Contract: ________________________

Basis of Termination or Withholding: __________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

(Add additional pages as necessary)

Offerer certifies that all information provided to the Governmental Entity with respect to State Finance Law §139-k is complete, true and accurate.

By: ___________________________ Date: ___________________________

Signature

Name: _________________________

Title: _________________________
NON-COLLUSIVE BIDDING CERTIFICATION
Required by Section 2878 of the Public Authorities Law

By submission of this bid, bidder and each person signing on behalf of bidder certifies, and in the case of joint bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of his/her knowledge and belief:

[1] The prices of this bid have been arrived at independently, without collusion, consultation, communication, or agreement, for the purposes of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor;

[2] Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the Bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and

[3] No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

A BID SHALL NOT BE CONSIDERED FOR AWARD NOR SHALL ANY AWARD BE MADE WHERE [1], [2], [3] ABOVE HAVE NOT BEEN COMPLIED WITH; PROVIDED HOWEVER, THAT IF IN ANY CASE THE BIDDER(S) CANNOT MAKE THE FORGOING CERTIFICATION, THE BIDDER SHALL SO STATE AND SHALL FURNISH BELOW A SIGNED STATEMENT WHICH SETS FORTH IN DETAIL THE REASONS THEREFORE:

[AFFIX ADDENDUM TO THIS PAGE IF SPACE IS REQUIRED FOR STATEMENT.]

Subscribed to under penalty of perjury under the laws of the State of New York, this ___ day of ________, 20__ as the act and deed of said corporation of partnership.

IF BIDDER(S) (ARE) A PARTNERSHIP, COMPLETE THE FOLLOWING:

NAMES OF PARTNERS OR PRINCIPALS LEGAL RESIDENCE

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________
IF BIDDER(S) (ARE) A CORPORATION, COMPLETE THE FOLLOWING:

<table>
<thead>
<tr>
<th>NAMES</th>
<th>LEGAL RESIDENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

President

Secretary

Treasurer

President

Secretary

Treasurer

Identifying Data:

Potential Contractor:

Street Address:

City, Town, etc.

Telephone: Title:

If applicable, Responsible Corporate Officer Name

Title

Signature
Joint or combined bids by companies or firms must be certified on behalf of each participant:

________________________________________  ______________________________________

Legal name of person, firm or corporation Legal name of person, firm or corporation

By ____________________________________  By ____________________________________

(Name)  (Name)

Title

________________________________________  ______________________________________

Street Address Street Address

________________________________________  ______________________________________

City and State City and State
INVITATION FOR BID: Storm Hardening at Edgewater Park Volunteer Fire Department – IFB # GOSR-IFB-2022-01

APPENDIX III – DIVERSITY FORMS
EQUAL EMPLOYMENT OPPORTUNITY
STAFFING PLAN
Submit with Bid or Proposal – Instructions on page 2

Solicitation/Program Name:

Report includes:
- Workforce to be utilized on this contract
- Contractor/Subcontractor’s total work force

Offeror’s Name:

Reporting Entity:
- Contractor
- Subcontractor
Subcontractor’s name________________

Offeror’s Address:

Enter the total number of employees for each classification in each of the EEO-Job Categories identified

<table>
<thead>
<tr>
<th>EEO-Job Category</th>
<th>Total Workforce</th>
<th>Workforce by Gender</th>
<th>Workforce by Race/Ethnic Identification</th>
<th>Disabled</th>
<th>Veteran</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Male (M)</td>
<td>Total Female (F)</td>
<td>White (M) (F) Black (M) (F) Hispanic (M) (F) Asian (M) (F) Native American (M) (F) Disabled (M) (F) Veteran (M) (F)</td>
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<td></td>
</tr>
<tr>
<td>Officials/Administrators</td>
<td></td>
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<tr>
<td>Professionals</td>
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<tr>
<td>Technicians</td>
<td></td>
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<tr>
<td>Service Maintenance</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Workers</td>
<td></td>
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<tr>
<td>Office/Clerical</td>
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<tr>
<td>Skilled Craft Workers</td>
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<tr>
<td>Paraprofessionals</td>
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<tr>
<td>Protective Service</td>
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<tr>
<td>Workers</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

PREPARED BY (Signature):

TELEPHONE NO.:

EMAIL ADDRESS:

NAME AND TITLE OF PREPARER (Print or Type):

DATE:

SUBMIT COMPLETED WITH BID OR PROPOSAL
General instructions: All Offerors and each subcontractor identified in the bid or proposal must complete an EEO Staffing Plan and submit it as part of the bid or proposal package. Where the work force to be utilized in the performance of the State contract can be separated out from the contractor’s or subcontractor’s total work force, the Offeror shall complete this form only for the anticipated work force to be utilized on the State contract. Where the work force to be utilized in the performance of the State contract cannot be separated out from the contractor’s or subcontractor’s total work force, the Offeror shall complete this form for the contractor’s or subcontractor’s total work force.

Instructions for completing:
1. Enter the Solicitation number or RFP number that this report applies to along with the name and address of the Offeror.
2. Check off the appropriate box to indicate if the Offeror completing the report is the contractor or a subcontractor.
3. Check off the appropriate box to indicate if the work force being reported is just for the contract or the Offerors’ total workforce.
4. Enter the total work force by EEO job category.
5. Break down the total work force by gender and enter under the heading ‘Workforce by Gender’
6. Break down the total work force by race/ethnic background and enter under the heading ‘Work force by Race/Ethnic Identification’. Contact the Designated Contact(s) for the solicitation if you have any questions.
7. Enter information on disabled or veterans included in the work force under the appropriate headings.
8. Enter the name, title, phone number and email address for the person completing the form. Sign and date the form in the designated boxes.

RACE/ETHNIC IDENTIFICATION
Race/ethnic designations as used by the Equal Employment Opportunity Commission do not denote scientific definitions of anthropological origins. For the purposes of this report, an employee may be included in the group to which he or she appears to belong, identifies with, or is regarded in the community as belonging. However, no person should be counted in more than one race/ethnic group. The race/ethnic categories for this survey are:

- **WHITE** (Not of Hispanic origin) All persons having origins in any of the original peoples of Europe, North Africa, or the Middle East.
- **BLACK** a person, not of Hispanic origin, who has origins in any of the black racial groups of the original peoples of Africa.
- **HISPANIC** a person of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish culture or origin, regardless of race.
- **ASIAN & PACIFIC ISLANDER** a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent or the Pacific Islands.
- **NATIVE INDIAN (NATIVE AMERICAN/ ALASKAN NATIVE)** a person having origins in any of the original peoples of North America, and who maintains cultural identification through tribal affiliation or community recognition.

OTHER CATEGORIES
- **DISABLED INDIVIDUAL** any person who:
  - has a physical or mental impairment that substantially limits one or more major life activity(ies)
  - has a record of such an impairment; or
  - is regarded as having such an impairment.
- **VIETNAM ERA VETERAN** a veteran who served at any time between and including January 1, 1963 and May 7, 1975.
- **GENDER** Male (M) or Female (F)
# M/WBE UTILIZATION PLAN

**INSTRUCTIONS:** This form must be submitted with any bid, proposal, or proposed negotiated contract or within a reasonable time thereafter, but prior to contract award. This Utilization Plan must contain a detailed description of the supplies and/or services to be provided by each certified Minority and Women-owned Business Enterprise (M/WBE) under the contract. Attach additional sheets if necessary.

<table>
<thead>
<tr>
<th>Offeror’s Name:</th>
<th>Federal Identification Number:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address:</td>
<td>Solicitation Number:</td>
</tr>
<tr>
<td>City, State, Zip Code:</td>
<td>Telephone Number:</td>
</tr>
</tbody>
</table>

**Region/Location of Work:**

<table>
<thead>
<tr>
<th>M/WBE Goals in the Contract:</th>
<th>MBE %</th>
<th>WBE %</th>
</tr>
</thead>
</table>

## Certified M/WBE Subcontractors/Suppliers

<table>
<thead>
<tr>
<th>Name, Address, Email Address, Telephone No.</th>
<th>2. Classification</th>
<th>3. Federal ID No.</th>
<th>4. Detailed Description of Work</th>
<th>5. Dollar Value of Subcontracts/Supplies/Services and intended performance dates of each component of the contract</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>NYS ESD CERTIFIED</td>
<td>☐ MBE</td>
<td>☐ WBE</td>
<td></td>
</tr>
<tr>
<td>B.</td>
<td>NYS ESD CERTIFIED</td>
<td>☐ MBE</td>
<td>☐ WBE</td>
<td></td>
</tr>
</tbody>
</table>

## M/WBE and WBE Goals

6. IF UNABLE TO FULLY MEET THE MBE AND WBE GOALS SET FORTH IN THE CONTRACT, OFFEROR MUST SUBMIT A REQUEST FOR WAIVER FORM (PROC-5).

**PREPARED and APPROVED BY:**

**NAME AND TITLE OF PREPARER (Print or Type):**

**Signature:** ________________________________

Authorized Signature

**DATE:**

**TELEPHONE NO:**

**EMAIL ADDRESS:**

**FOR AGENCY USE ONLY**

**REVIEWED BY:**

**DATE:**

**UTILIZATION PLAN APPROVED:** ☐ YES ☐ NO Date:

**Contract No:**

**Contract Award Date:**

**Estimated Date of Completion:**

**Amount Obligated Under the Contract:**

**NOTICE OF DEFICIENCY ISSUED:** ☐ YES ☐ NO Date: ____________

**NOTICE OF ACCEPTANCE ISSUED:** ☐ YES ☐ NO Date: ____________

**SUBMISSION OF THIS FORM CONSTITUTES THE OFFEROR’S ACKNOWLEDGEMENT AND AGREEMENT TO COMPLY WITH THE M/WBE REQUIREMENTS SET FORTH UNDER NYS EXECUTIVE LAW, ARTICLE 15-A, 5 NYCRR PART 143, AND THE ABOVE REFERENCED SOLICITATION. FAILURE TO SUBMIT COMPLETE AND ACCURATE INFORMATION MAY RESULT IN A FINDING OF NONCOMPLIANCE AND POSSIBLE TERMINATION OF YOUR CONTRACT.**
**M/WBE UTILIZATION PLAN**

**INSTRUCTIONS:** This form must be submitted with any bid, proposal, or proposed negotiated contract or within a reasonable time thereafter, but prior to contract award. This Utilization Plan must contain a detailed description of the supplies and/or services to be provided by each certified Minority and Women-owned Business Enterprise (M/WBE) under the contract. Attach additional sheets if necessary.

<table>
<thead>
<tr>
<th>Offeror's Name:</th>
<th>Federal Identification Number:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address:</td>
<td>Solicitation Number:</td>
</tr>
<tr>
<td>City, State, Zip Code:</td>
<td>Telephone Number:</td>
</tr>
</tbody>
</table>

Region/Location of Work:

**M/WBE Goals in the Contract:**

<table>
<thead>
<tr>
<th>MBE</th>
<th>WBE</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>%</td>
</tr>
</tbody>
</table>

1. **Certified M/WBE Subcontractors/Suppliers**
   Name, Address, Email Address, Telephone No.

2. **Classification**

3. **Federal ID No.**

4. **Detailed Description of Work**
   (Attach additional sheets, if necessary)

5. **Dollar Value of Subcontracts / Supplies/Services and intended performance dates of each component of the contract.**

6. **IF UNABLE TO FULLY MEET THE MBE AND WBE GOALS SET FORTH IN THE CONTRACT, OFFEROR MUST SUBMIT A REQUEST FOR WAIVER FORM (PROC-5).**

**PREPARED and APPROVED BY:**

**NAME AND TITLE OF PREPARER (Print or Type):**

Signature: ____________________________

Authorized Signature

DATE: ____________________________

TELEPHONE NO: ____________________________

EMAIL ADDRESS: ____________________________

**FOR AGENCY USE ONLY**

**REVIEWED BY:**

DATE: ____________________________

**UTILIZATION PLAN APPROVED:**

☐ YES ☐ NO Date: ____________________________

**Contract No:**

**Contract Award Date:**

**Estimated Date of Completion:**

**Amount Obligated Under the Contract:**

**NOTICE OF DEFICIENCY ISSUED:**

☐ YES ☐ NO Date: ____________________________

**NOTICE OF ACCEPTANCE ISSUED:**

☐ YES ☐ NO Date: ____________________________

**INSTRUCTIONS:** This form must be submitted with any bid, proposal, or proposed negotiated contract or within a reasonable time thereafter, but prior to contract award. This Utilization Plan must contain a detailed description of the supplies and/or services to be provided by each certified Minority and Women-owned Business Enterprise (M/WBE) under the contract. Attach additional sheets if necessary.

SUBMISSION OF THIS FORM CONSTITUTES THE OFFEROR'S ACKNOWLEDGEMENT AND AGREEMENT TO COMPLY WITH THE M/WBE REQUIREMENTS SET FORTH UNDER NYS EXECUTIVE LAW, ARTICLE 15-A, 5 NYCRR PART 143, AND THE ABOVE REFERENCED SOLICITATION. FAILURE TO SUBMIT COMPLETE AND ACCURATE INFORMATION MAY RESULT IN A FINDING OF NONCOMPLIANCE AND POSSIBLE TERMINATION OF YOUR CONTRACT.
MINORITY AND WOMEN-OWNED BUSINESS ENTERPRISES – EQUAL EMPLOYMENT OPPORTUNITY POLICY STATEMENT

M/WBE AND EEO POLICY STATEMENT

I, _________________________, the (awardee/contractor)____________________ agree to adopt the following policies with respect to the project being developed or services rendered for (name agency/ies or project location)_________________________________________________________________________

MWBE

This organization will and will cause its contractors and subcontractors to take good faith actions to achieve the M/WBE contract participations goals set by the State for that area in which the State-funded project is located, by taking the following steps:

1. Actively and affirmatively solicit bids for contracts and subcontracts from qualified State certified MBEs or WBEs, including solicitations to M/WBE contractor associations.
2. Request a list of State-certified M/WBEs from Agency(ies) and solicit bids from them directly.
3. Ensure that plans, specifications, request for proposals and other documents used to secure bids will be made available in sufficient time for review by prospective M/WBEs.
4. Where feasible, divide the work into smaller portions to enhanced participations by M/WBEs and encourage the formation of joint venture and other partnerships among M/WBE contractors to enhance their participation.
5. Document and maintain records of bid solicitation, including those to M/WBEs and the results thereof. Contractor will also maintain records of actions that its subcontractors have taken toward meeting M/WBE contract participation goals.
6. Ensure that progress payments to M/WBEs are made on a timely basis so that undue financial hardship is avoided, and that bonding and other credit requirements are waived or appropriate alternatives developed to encourage M/WBE participation.

EEO

(a) This organization will not discriminate against any employee or applicant for employment because of race, creed, color, national origin, sex, age, disability or marital status, will undertake or continue existing programs of affirmative action to ensure that minority group members are afforded equal employment opportunities without discrimination, and shall make and document its conscientious and active efforts to employ and utilize minority group members and women in its work force on State contracts.
(b) This organization shall state in all solicitation or advertisements for employees that in the performance of the State contract all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex disability or marital status.
(c) At the request of the contracting agency, this organization shall request each employment agency, labor union, or authorized representative for a statement that it will not discriminate on the basis of race, creed, color, national origin, sex, age, disability or marital status and that such union or representative will affirmatively cooperate in the implementation of this organization’s obligations herein.
(d) Contractor shall comply with the provisions of the Human Rights Law, all other State and Federal statutory and constitutional non-discrimination provisions. Contractor and subcontractors shall not discriminate against any employee or applicant for employment because of race, creed (religion), color, sex, national origin, sexual orientation, military status, age, disability, predisposing genetic characteristic, marital status or domestic violence victim status, and shall also follow the requirements of the Human Rights Law with regard to non-discrimination on the basis of prior criminal conviction and prior arrest.
(e) This organization will include the provisions of sections (a) through (d) of this agreement in every subcontract in such a manner that the requirements of the subdivisions will be binding upon each subcontractor as to work in connection with the State contract.

Agreed to this ______ day of ______________________, 2___________

By __________________________________________

Print: _____________________________________ Title: ___________________________
_________________________ is designated as the Minority Business Enterprise Liaison

He/she is responsible for administering the Minority and Women-Owned Business Enterprises-Equal Employment Opportunity (M/WBE-EEO) program.

**M/WBE Contract Goals**

30% Minority and Women’s Business Enterprise Participation

15% Minority Business Enterprise Participation

15% Women’s Business Enterprise Participation

**EEO Contract Goals**

___% Minority Labor Force Participation

___% Female Labor Force Participation
SDVOB UTILIZATION PLAN

INSTRUCTIONS: This Utilization Plan must contain a detailed description of the supplies and/or services to be provided by each NYS Certified Service-Disabled Veteran-Owned Business (SDVOB) under the contract. By submission of this Plan, the Bidder/Contractor commits to making good faith efforts in the utilization of SDVOB subcontractors and suppliers as required by the SDVOB goals contained in the Solicitation/Contract. Making false representations or providing information that shows a lack of good faith as part of, or in conjunction with, the submission of a Utilization Plan is prohibited by law and may result in penalties including, but not limited to, termination of a contract for cause, loss of eligibility to submit future bids, and/or withholding of payments. Firms that do not perform commercially useful functions may not be counted toward SDVOB utilization. Attach additional sheets if necessary.

BIDDER/CONTRACTOR INFORMATION

SDVOB Goals In Contract

<table>
<thead>
<tr>
<th>Bidder/Contractor Name:</th>
<th>NYS Vendor ID:</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bidder/Contractor Address (Street, City, State and Zip Code):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bidder/Contractor Telephone Number:</td>
<td>Contract Work Location/Region:</td>
<td></td>
</tr>
<tr>
<td>Contract Description/Title:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CONTRACTOR INFORMATION

Prepared by (Signature): Name and Title of Preparer: Telephone Number: Date: Email Address:

If unable to meet the SDVOB goals set forth in the solicitation/contract, bidder/contractor must submit a request for waiver on the SDVOB Waiver Form.

SDVOB Subcontractor/Supplier Name:

Please identify the person you contacted: Federal Identification No.: Telephone No.:

Address: Email Address:

Detailed description of work to be provided by subcontractor/supplier:

Dollar Value of subcontracts/supplies/services (When $ value cannot be estimated, provide the estimated % of contract work the SDVOB will perform): $___________ or __________%

SDVOB Subcontractor/Supplier Name:

Please identify the person you contacted: Federal Identification No.: Telephone No.:

Address: Email Address:

Detailed Description of work to be provided by subcontractor/supplier:

Dollar Value of subcontracts/supplies/services (When $ value cannot be estimated, provide the estimated % of contract work the SDVOB will perform): $___________ or __________%

FOR DOCCS USE ONLY

DOCCS Authorized Signature: □ Accepted □ Accepted as Noted □ Notice of Deficiency

NAME (Please Print): SDVOB %/$ Date Received: Date Processed: Comments:

NYS CERTIFIED SDVOB SUBCONTRACTOR/SUPPLIER INFORMATION: The directory of New York State Certified SDVOBs can be viewed at: https://ogs.ny.gov/Veterans/default.asp

Note: All listed Subcontractors/Suppliers will be contacted and verified by DOCCS.
# ADDITIONAL SHEET

<table>
<thead>
<tr>
<th>Bidder/Contractor Name:</th>
<th>Contract/Solicitation #</th>
</tr>
</thead>
</table>

| SDVOB Subcontractor/Supplier Name: |  |
|-----------------------------------|  |
| Please identify the person you contacted: | Federal Identification No.: | Telephone No.: |
| Address: | Email Address: |
| Detailed Description of work to be provided by subcontractor/supplier: |  |

Dollar Value of subcontracts/supplies/services (When $ value cannot be estimated, provide the estimated % of contract work the SDVOB will perform): $___________ or __________% 

| SDVOB Subcontractor/Supplier Name: |  |
|-----------------------------------|  |
| Please identify the person you contacted: | Federal Identification No.: | Telephone No.: |
| Address: | Email Address: |
| Detailed Description of work to be provided by subcontractor/supplier: |  |

Dollar Value of subcontracts/supplies/services (When $ value cannot be estimated, provide the estimated % of contract work the SDVOB will perform): $___________ or __________% 

| SDVOB Subcontractor/Supplier Name: |  |
|-----------------------------------|  |
| Please identify the person you contacted: | Federal Identification No.: | Telephone No.: |
| Address: | Email Address: |
| Detailed Description of work to be provided by subcontractor/supplier: |  |

Dollar Value of subcontracts/supplies/services (When $ value cannot be estimated, provide the estimated % of contract work the SDVOB will perform): $___________ or __________% 

| SDVOB Subcontractor/Supplier Name: |  |
|-----------------------------------|  |
| Please identify the person you contacted: | Federal Identification No.: | Telephone No.: |
| Address: | Email Address: |
| Detailed Description of work to be provided by subcontractor/supplier: |  |

Dollar Value of subcontracts/supplies/services (When $ value cannot be estimated, provide the estimated % of contract work the SDVOB will perform): $___________ or __________%
EEOC Statement
of the
Division of Housing and Community Renewal,
New York State Housing Finance Agency,
State of New York Mortgage Agency,
New York State Affordable Housing Corporation,
State of New York Municipal Bond Bank Agency,
Tobacco Settlement Financing Corporation,
Housing Trust Fund Corporation
(individually, “Agency” and collectively, “Agencies”)

It is the goal of the Agencies to ensure compliance with the federal Equal Employment Opportunity Act of 1972, as amended. Respondents with fifteen (15) or more employees responding to this solicitation, must submit a statement disclosing whether the Respondent is currently operating under or negotiating, or has at some time in the last five (5) years operated under or negotiated, a conciliation agreement with the Equal Employment Opportunity Commission (“EEOC”); has been, at some time in the last five (5) years, or is currently the subject of a civil action brought against it by the EEOC; has been, at some time in the last five (5) years, or is currently the subject of an action brought against it by the EEOC for permanent, temporary or preliminary relief; has operated, at some time in the last five (5) years, or is currently operating under an order of a court to take affirmative action as a result of a civil action brought against it by EEOC.

Please answer the above question either in the affirmative or negative.

______________________Respond YES or NO.

If YES, provide explanation:

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

_________________________________  ______________________________
Respondent’s Signature                                                                Date of Respondent’s Signature

______________________________
Print Name of Respondent
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  Section 3 Goals: Business Concerns .................................................................................................................................................. 2
  Evidence of Section 3 Certification .................................................................................................................................................. 2
  Documenting Greatest Extent Feasible Efforts .................................................................................................................................. 3
  Greatest Extent Feasible Efforts Examples ...................................................................................................................................... 3
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PART I. SECTION 3 GOALS AND REQUIREMENTS

Section 3 goals apply to subrecipients, contractors, and subcontractors. The subrecipient will perform outreach efforts along with the Prime Contractor (“Contractor”), and will ensure compliance with the Section 3 Greatest Extent Feasible goals as described below. The Contractor will submit PART II. SECTION 3 PLAN FOR CONTRACTORS to document efforts and utilization for Section 3 Business Concerns and Residents. The Contractor should ensure that any subcontractors who are hiring new employees or procuring sub-subcontractors should perform outreach to the Greatest Extent Feasible.

Section 3 Goal: New Hires
This goal applies to contract awards of $100,000 or more in connection with a Section 3 eligible project.
Contractor will, to the greatest extent feasible, strive to comply with the following goal:

- Thirty percent (30%) of the aggregate number of new hires for the project shall be Section 3 residents

A Section 3 Resident is a public housing resident, low and very-low income person (as defined by HUD) who lives in the metropolitan area or non-metropolitan county where a HUD-assisted project for housing or community development is located.

If Contractor does not meet the Section 3 goal for new hires, Subrecipient and Contractor must demonstrate why meeting the goal was not feasible.

**Section 3 Goals: Business Concerns**

These goals apply to contract awards of $100,000 or more in connection with a Section 3 eligible project. Contractor will, to the greatest extent feasible, strive to comply with the following goals:

- Ten percent (10%) of the total dollar amount of all covered construction contracts shall be awarded to Section 3 business concerns
- Three percent (3%) of the total dollar amount of all covered non-construction contracts shall be awarded to Section 3 business concerns.

Section 3 Business Concerns are businesses that can provide evidence that they meet one of the following criteria:

  a) Business is 51 percent or more owned by Section 3 residents; or
  b) At least 30 percent of business’ full-time employees include persons that are currently Section 3 residents, or within three years of the date of first employment with the business concern were Section 3 residents; or

Business provides evidence of commitment to sub-subcontract in excess of 25 percent of the dollar award of its subcontract to business concerns that meet the qualifications in the above two clauses a and b.

If Contractor does not meet the Section 3 goals for business concerns, Subrecipient and Contractor must demonstrate why meeting the goal was not feasible.

Contractors are not required to hire or enter into contracts with unqualified Section 3 Residents or Business Concerns simply to meet the Section 3 goals, as anyone selected for contracting or employment opportunities must meet the qualifications for the job/contract being sought. However, contractors must document their outreach efforts and, to the greatest extent feasible (GEF), attempt to source qualified Section 3 residents and business concerns to meet the goal. If the expenditure of funding for an otherwise covered project and activity does not result in new employment, contracting, or training opportunities, reporting is still required.

**Evidence of Section 3 Certification**

Contractor should provide the Section 3 Employee Self-Affirmation Form to employees who may qualify as Section 3 Residents. Section 3 Employee Self-Affirmation Forms and other documentation should be maintained by the Subrecipient, Contractor, and/or Subcontractor as applicable.
Businesses can self-certify as Section 3 Business Concerns by completing the HUD Section 3 Business Registry (https://portalapps.hud.gov/Sec3BusReg/BRegistry/RegisterBusiness). The business seeking Section 3 status must be able to provide adequate documentation as evidence of meeting the criteria for Section 3 Business Concerns listed above.

**Documenting Greatest Extent Feasible Efforts**

Contractors that fail to meet the minimum numerical goals bear the burden of demonstrating why it was not possible to do so. Such justifications should describe the efforts that were taken, barriers encountered, and other relevant information that will enable making a compliance determination. Contractors that submit Section 3 Plans containing all zeroes, without a sufficient explanation to justify their submission, are in noncompliance with the requirements of Section 3.

If Contractor does not meet the Section 3 goals, the Contractor shall submit copies of supporting documentation to show efforts were made to comply with Section 3 to the greatest extent feasible, including but not limited to the following:

- Reporting summary with metrics of strategies selected,
- A narrative that ties in all good faith effort components,
- Maintain a database of supporting raw data detailing outreach efforts, responses, and results

The Contractor may use GOSR’s Section 3 GEF efforts documentation spreadsheet, or may record this information in another format. Backup documentation should be included as well.

**Greatest Extent Feasible Efforts Examples**

**Efforts for Section 3 Residents**

1. Recruit Section 3 Residents for open positions
   i. Notify Section 3 coordinator of any current or future open positions.
   ii. Advertise employment and training positions in the project service area or neighborhood by distributing flyers or publishing advertisements in local papers or community publications. Advertisements should note that this is a Section 3 eligible project.
   iii. Contact local organizations and request their assistance in notifying Section 3 Residents of the positions to be filled. Organizations include educational institutions, housing developments, community organizations, state-local agencies, probation-parole agencies, and unemployment compensation programs.
   iv. Sponsor a job fair or informational meeting. Coordinate with local organizations.
   v. Employ a job coordinator or consult with local employment service providers to match eligible and qualified Section 3 Residents with open positions.
   vi. Maintain file of eligible, interested applicants.

2. Utilize Apprenticeship Programs to Hire Section 3 Residents
   i. Many apprentices may qualify as Section 3 Residents based on their income levels. Contractors should encourage all apprentices to fill out the Section 3 Self-Certification Form. Strategies for hiring apprentices include creating an apprenticeship program, or hiring from existing apprenticeship programs.
Efforts for Section 3 Business Concerns

1. Contact business assistance agencies, minority contracting associations and community organizations to inform them of opportunities and seek assistance in identifying eligible businesses.

2. Advertise contracting opportunities through trade association papers and newsletters, and through the local media, such as community television networks, newspapers of general circulation, and radio advertising.

3. Where appropriate, break out contract work items into economically feasible units to facilitate participation by Section 3 Business Concerns.

4. Use the HUD Section 3 Businesses Registry (https://portalapps.hud.gov/Sec3BusReg/BRegistry/SearchBusiness) to search for Section 3 Business Concerns. Reach out to all applicable Section 3 Business Concerns directly with potential subcontracting opportunities.

5. Maintain a log of all contacts with Section 3 Business Concerns and develop a relationship with these firms in case opportunities develop over the life of the contract.

6. Create an account on the NYS Contract Reporter system (https://www.nyscr.ny.gov) and advertise subcontracting opportunities for Section 3 Business Concerns.

   After all M/WBEs have been identified for utilization on the project, determine if these M/WBE firms also qualify as Section 3 Business Concerns. Request that the subs fill out the Certification for Businesses Seeking Identification as Section 3 and that their employees fill out the Certification for Individuals Seeking Identification as Section 3 Business Concerns.

Section 3 Reporting & Training

The Governor’s Office of Storm Recovery (GOSR) utilizes Elation Systems, a web-based compliance management system, to help all its Contractors and Subrecipients receiving Federal CDBG-DR funds to adhere to Labor Compliance (Davis-Bacon), Minority and Women Owned Business (MWBE) and Section 3 Federal reporting requirements.
PART II. SECTION 3 PLAN FOR CONTRACTORS

Instructions
This document serves as the Section 3 Plan for the Contractor’s work on the project in compliance with the requirements of Section 3 of the Housing and Urban Development Act of 1968 (24 CFR Part 135.30), as amended. Section 3 is intended to ensure that, to the greatest extent feasible, low- and very low-income persons receive benefits in employment and related economic opportunities when such opportunities are generated by funding from HUD.

For construction contracts, the apparent responsible low bidder must submit this Section 3 Plan document within twenty-one (21) days of the bid opening to the GOSR Program Manager. The Section 3 Plan must be submitted before GOSR will provide contract consent.

Section 3 goals apply to subrecipients, contractors, and subcontractors. The Prime Contractor (“Contractor”) will submit this Section 3 Plan to document efforts and utilization for Section 3 Business Concerns and Residents. The subrecipient will perform outreach efforts along with the Contractor, and will ensure compliance with the Section 3 Greatest Extent Feasible goals as described below. The Contractor should ensure that any subcontractors who are hiring new employees or procuring sub-subcontractors should perform outreach to the Greatest Extent Feasible.

Supporting Documentation must be submitted with this Plan if Section 3 Business Concern and/or Resident goals are not met. Supporting Documentation will also be collected at the end of the contract, before final payment, if actual utilization does not meet the utilization in this Plan.

General Information
Contractor Name: ____________________________________________
Type of Contract: ☐ Construction ☐ Non-construction
Project Name: ________________________________________________
Bid Opening Date: ____________________________________________
Date of Section 3 Plan Submittal: _________________________________

Authorized Representative (Name, Title): _________________________
Address: _____________________________________________________
Phone: _______________________________________________________
Email: ________________________________________________________
Signature: ___________________________________________________
Section 3 Utilization Plan

TABLE 1A: SECTION 3 BUSINESS CONCERN SUMMARY

<table>
<thead>
<tr>
<th>Type of Contract (% Goal)</th>
<th>Total Contract Value</th>
<th>Section 3 Business Concern²</th>
<th>Est. Section 3 Business Concern Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction (10% Goal)</td>
<td>$ 0.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TABLE 1B: BUSINESS UTILIZATION BREAKDOWN

<table>
<thead>
<tr>
<th>Subcontractor Name</th>
<th>Description of Work to be Performed</th>
<th>Est. Contract Amount</th>
<th>Section 3 Business Concern**? (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$</td>
<td>No</td>
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<tr>
<td></td>
<td></td>
<td>$</td>
<td>No</td>
</tr>
</tbody>
</table>

TABLE 2A: SECTION 3 NEW HIRES SUMMARY

<table>
<thead>
<tr>
<th>Total Est. New Hires</th>
<th>Section 3 Residents* Goal (30% of New Hires)</th>
<th>Est. Section 3 Residents* Utilization (no. of new hires who are Section 3 Residents)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

² Section 3 Business Concerns are businesses that can provide evidence that they meet one of the following criteria:
   a) Business is 51 percent or more owned by Section 3 residents; or
   b) At least 30 percent of business' full time employees include persons that are currently Section 3 residents, or within three years of the date of first employment with the business concern were Section 3 residents; or
   c) Business provides evidence of commitment to sub-subcontract in excess of 25 percent of the dollar award of its subcontract to business concerns that meet the qualifications in the above two clauses a and b.
### TABLE 2B: SECTION 3 WORKFORCE UTILIZATION BREAKDOWN

<table>
<thead>
<tr>
<th>Job Category</th>
<th>Total Estimated Positions</th>
<th>No. Positions Currently Occupied By Permanent Employees</th>
<th>No. Positions Not Currently Occupied</th>
<th>No. Positions To Be Filled w/Section 3 Residents&lt;sup&gt;3&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Officers/Supervisors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professionals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technicians</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing Sales/Rental/Mgmt.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office Clerical</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service Workers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TRADE:

- Journeymen
- Apprentices
- Maximum No. Trainees
- Others

### TRADE:

- Journeymen
- Apprentices
- Maximum No. Trainees
- Others

---

<sup>3</sup> A Section 3 resident is a public housing resident, low and very-low income person who lives in the metropolitan area or non-metropolitan county where a HUD-assisted project for housing or community development is located.
Outreach for Greatest Extent Feasible (GEF) Compliance

If Contractor’s utilization does not meet the Section 3 Business Concern or Section 3 Residents goals, Contractor must fill out this section to document both previous and future outreach strategies for Business Concern and/or Resident utilization, to show efforts were made to comply with Section 3 to the Greatest Extent Feasible.

Please provide a narrative description of 1) the outreach efforts that the Contractor has taken to meet the Section 3 Business Concern and Section 3 Resident utilization goals, 2) the results of the outreach, and 3) any factors that influenced Section 3 Business Concern or Resident outreach results.

Contractor must attach list of outreach efforts performed with backup documentation. Contractor may use GOSR’s template or may include information in another format.

Does the Contractor require assistance at this time from GOSR’s Office of Diversity and Civil Rights regarding Section 3 outreach (including but not limited to events, training and support in approaching Union based training and apprenticeship programs)? Yes ☐ No ☐

If yes, please explain:
APPENDIX IV – CONSTRUCTION REQUIREMENTS AND PROCEDURES FOR CONTRACTS WITH HOUSING TRUST FUND CORPORATION
APPENDIX IV

CONSTRUCTION REQUIREMENTS AND PROCEDURES FOR CONTRACTS WITH

HOUSING TRUST FUND CORPORATION
<table>
<thead>
<tr>
<th>Contractors Name and Address</th>
<th>Federal ID #</th>
<th></th>
<th></th>
<th>Goals</th>
<th></th>
<th>Reporting Period</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>MBE</td>
<td>WBE</td>
<td></td>
<td>Quarter</td>
<td>Year</td>
</tr>
<tr>
<td></td>
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<tr>
<td>SHARS/Project #</td>
<td>Work Location</td>
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<tr>
<td><strong>Name of Firm and Address</strong></td>
<td><strong>Type of Service Provided</strong></td>
<td><strong>NYS Certified</strong></td>
<td><strong>Payment This period</strong></td>
<td><strong>Contract Amount</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(List All Firms)</td>
<td>(Select only one)</td>
<td>MBE</td>
<td>WBE</td>
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</tbody>
</table>

Signature of Company Official
Print Name of Company Official
Date
ADM-123 (rev. 3/12)
INSTRUCTIONS FOR FILING CUMULATIVE PAYMENT STATEMENT

This document pertains to **HCR funding only**: The form is to be completed and signed by the Company Official and submitted by the 10th of each quarter. The form must include **ALL** (e.g., MBE, WBE and non-M/WBE) subcontractors or suppliers assigned to this contract. The Affirmation of Income Payments to MBE/WBE (ADM-146) must accompany this form for each MBE/WBE firm who has received payment.

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Reporting Period</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>April 1 – June 30</td>
<td>July 10</td>
</tr>
<tr>
<td>2nd</td>
<td>July 1 - September 30</td>
<td>October 10</td>
</tr>
<tr>
<td>3rd</td>
<td>October 1 - December 31</td>
<td>January 10</td>
</tr>
<tr>
<td>4th</td>
<td>January 1 – March 31</td>
<td>April 10</td>
</tr>
</tbody>
</table>

**Contractor’s Name & Address:** Indicate name, address, city, state and zip code.

**Contractor’s Federal ID #:** If Federal ID # not assigned, provide Social Security # of the owner.

**Goals:** Indicate HCR’s assigned MBE and WBE participation goals.

**Reporting Period:** Indicate reported month and year.

**SHARS/Project #:** Indicate HCR’s SHARS #/Project #.

**Subcontractor or Supplier Name & Address**

**Federal ID #:** If Federal ID # not assigned, provide Social Security # of the owner.

**Description of Work:** Check the box that best describes the work performed. (CHECK ONE BOX ONLY)

**NYS Certified** Indicate if MBE or WBE. (CHECK ONE BOX ONLY) Only firms certified by NYS will be counted towards goals.

**Payments This Period:** Indicate amount paid to each subcontractors or suppliers this reporting period.

**NOTE:** IF THERE WAS NO PAYMENT THIS PERIOD, PLEASE CHECK THE BOX.

**Contract Amount:** Indicate total contract amounts or purchase agreement(s) for each subcontractor or supplier.
Each MBE and WBE FIRM must sign and submit this form to the Contractor. The Contractor/Vendor must submit this form to the Office of Fair Housing and Equal Opportunity by the 10th of each Quarter.

<table>
<thead>
<tr>
<th>CONSUMER</th>
<th>1. Name and Address of Contractor</th>
<th>2. SHARS/Project #</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Federal ID #</th>
<th>3. Reporting Period</th>
<th>Quarter</th>
<th>Year</th>
</tr>
</thead>
<tbody>
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<td></td>
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</table>

<table>
<thead>
<tr>
<th>M/WBE FIRM</th>
<th>1. Name and Address</th>
<th>2. Date contract started:</th>
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</thead>
<tbody>
<tr>
<td></td>
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<table>
<thead>
<tr>
<th>Federal ID #</th>
<th>3. New York State Certified (Check One)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>[ ] MBE</td>
</tr>
<tr>
<td></td>
<td>[ ] WBE</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>4. Type of Service Provider (Check one box only)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ] Construction</td>
<td>[ ] Supplier</td>
</tr>
<tr>
<td>[ ] Consultant Service</td>
<td>[ ] Service/Commodity</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. Summary of Payments</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Total MBE/WBE contract amount</td>
<td>$ ____________</td>
</tr>
<tr>
<td>b. MBE/WBE payment received for this reporting period</td>
<td>$ ____________</td>
</tr>
<tr>
<td>c. Total MBE/WBE payments received as of this reporting period</td>
<td>$ ____________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Signature of MBE/WBE</th>
<th>Print Name of MBE/WBE</th>
<th>Date</th>
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<tbody>
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<table>
<thead>
<tr>
<th>Signature of Contractor</th>
<th>Print Name of Contractor</th>
<th>Date</th>
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Failure to submit this form will result in non-compliance.

ADM-146 (rev. 12/10)


**MONTHLY EMPLOYMENT UTILIZATION REPORT**

(Instructions on Next Page)

<table>
<thead>
<tr>
<th>Project Name:</th>
<th>Reporting Period:</th>
<th>From:</th>
<th>To:</th>
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</thead>
<tbody>
<tr>
<td>Contractor/ Firm Name:</td>
<td>Address:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Federal ID/SS#:</td>
<td>SHARS #:</td>
<td>Location of Work:</td>
<td></td>
</tr>
</tbody>
</table>

| Labor Amount: | Construction Start Date: | Percent of Job Complete: |     |
|---------------|--------------------------|--------------------------|

**TOTAL NUMBER OF EMPLOYEES FOR THIS REPORTING PERIOD**

<table>
<thead>
<tr>
<th>Job or Trade Category</th>
<th>Total Number of Employees</th>
<th>Black or African American</th>
<th>Hispanic or Latino</th>
<th>Native Hawaiian or Other Pacific Islander</th>
<th>Native American or Alaskan Native</th>
<th>Asian</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M  F</td>
<td>M  F</td>
<td>M  F</td>
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<td>M  F</td>
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<tr>
<td>Professionals</td>
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<tr>
<td>Technicians</td>
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<tr>
<td>Office/Clerical</td>
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<tr>
<td>Construction Trade - List Each</td>
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</tbody>
</table>

**Grand Totals**

<table>
<thead>
<tr>
<th>Total Number of Employees</th>
<th>Black or African American</th>
<th>Hispanic or Latino</th>
<th>Native Hawaiian or Other Pacific Islander</th>
<th>Native American or Alaskan Native</th>
<th>Asian</th>
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<td>M  F</td>
<td>M  F</td>
</tr>
</tbody>
</table>

Company Official’s Name: ____________________________ Title: ____________________________

Company Official’s Signature: ____________________________ Date: ____________________________

Telephone Number: ____________________________ Fax Number: ____________________________

ADM-136 (rev. 2/2011)
NOTE: Failure to submit this form will result in non-compliance.

INSTRUCTIONS FOR FILING MONTHLY EMPLOYMENT UTILIZATION REPORT

The Monthly Employment Utilization Report (ADM-136) is to be completed and signed by the contractor or subcontractor and submitted by the 10th of each quarter for the duration of this contract. This report covers all hourly workers, including foremen, supervisors or crew chiefs, journey workers and apprentices or trainees working on the project. Professionals, technicians and office clerical field office staff working on the contract should also be reported.

Name of Project: Indicate the Name of Assigned Project

Reporting Period: Indicate reported month and year.

Contractor or Subcontractor Name: Indicate name, address, city and zip code.

Federal ID Number: If Federal ID # not assigned, provide Social Security # of the owner.

Labor Amount: Indicate dollar amount allocated for labor on the Detailed Estimate.

SHARS Number: Indicate HCR assigned SHARS #.

Location of Work: Indicate county where project is located.

Contract Start Date: Indicate date construction actually began.

Percent of Job Complete: Indicate the estimated percentage of job completed.

Job or Trade Category: Indicate the total number of employees for the field office staff, including supervisory personnel and administrative staff at the job site. Indicate the number of employees for each construction trade.

Total Number of Employees: Indicate the total number of all employees, regardless of ethnicity, under each trade category for all males (M) and all females (F). Note: These two columns include the number of employees for the entire workforce.

Total Number of Employees Minority & Females: Indicate the total number of employees for each minority group member(s) under each trade category for all minority males (M) and all females (F). Note: These columns include only the minority workforce.

Grand Totals: Total of columns under each trade category for all males (M) and all females (F).

The company official’s name, title and telephone number should be printed or typed at the bottom of the form.

ADM-136 (rev. 2/2011)
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<td>3</td>
</tr>
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<td>3. Comptroller’s Approval</td>
<td>3</td>
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<td>3</td>
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<td>6. Wage and Hours Provisions</td>
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<td>7. Non-Collusive Bidding Certification</td>
<td>4</td>
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<td>8. International Boycott Prohibition</td>
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<td>9. Set-Off Rights</td>
<td>4</td>
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<td>11. Identifying Information and Privacy Notification</td>
<td>4</td>
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<td>12. Equal Employment Opportunities For Minorities and Women</td>
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<tr>
<td>13. Conflicting Terms</td>
<td>5</td>
</tr>
<tr>
<td>14. Governing Law</td>
<td>5</td>
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<tr>
<td>15. Late Payment</td>
<td>5</td>
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<tr>
<td>16. No Arbitration</td>
<td>5</td>
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<tr>
<td>17. Service of Process</td>
<td>5</td>
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<tr>
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<td>5-6</td>
</tr>
<tr>
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</tr>
<tr>
<td>21. Reciprocity and Sanctions Provisions</td>
<td>6</td>
</tr>
<tr>
<td>22. Compliance with New York State Information Security Breach and Notification Act</td>
<td>6</td>
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<tr>
<td>23. Compliance with Consultant Disclosure Law</td>
<td>6</td>
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<tr>
<td>24. Procurement Lobbying</td>
<td>7</td>
</tr>
<tr>
<td>25. Certification of Registration to Collect Sales and Compensating Use Tax by Certain State Contractors, Affiliates and Subcontractors</td>
<td>7</td>
</tr>
<tr>
<td>26. Iran Divestment Act</td>
<td>7</td>
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STANDARD CLAUSES FOR NYS CONTRACTS

The parties to the attached contract, license, lease, amendment or other agreement of any kind (hereinafter, "the contract" or "this contract") agree to be bound by the following clauses which are hereby made a part of the contract (the word "Contractor" herein refers to any party other than the State, whether a contractor, licensor, licensee, lessor, lessee or any other party):

1. EXECUTORY CLAUSE. In accordance with Section 41 of the State Finance Law, the State shall have no liability under this contract to the Contractor or to anyone else beyond funds appropriated and available for this contract.

2. NON-ASSIGNMENT CLAUSE. In accordance with Section 138 of the State Finance Law, this contract may not be assigned by the Contractor or its right, title or interest therein assigned, transferred, conveyed, sublet or otherwise disposed of without the State’s previous written consent, and attempts to do so are null and void. Notwithstanding the foregoing, such prior written consent of an assignment of a contract let pursuant to Article XI of the State Finance Law may be waived at the discretion of the contracting agency and with the concurrence of the State Comptroller where the original contract was subject to the State Comptroller’s approval, where the assignment is due to a reorganization, merger or consolidation of the Contractor’s business entity or enterprise. The State retains its right to approve an assignment and to require that any Contractor demonstrate its responsibility to do business with the State. The Contractor may, however, assign its right to receive payments without the State’s prior written consent unless this contract concerns Certificates of Participation pursuant to Article 5-A of the State Finance Law.

3. COMPTROLLER'S APPROVAL. In accordance with Section 112 of the State Finance Law (or, if this contract is with the State University or City University of New York, Section 355 or Section 6218 of the Education Law), if this contract exceeds $50,000 (or the minimum thresholds agreed to by the Office of the State Comptroller for certain S.U.N.Y. and C.U.N.Y. contracts), or if this is an amendment for any amount to a contract which, as so amended, exceeds said statutory amount, or if, by this contract, the State agrees to give something other than money when the value or reasonably estimated value of such consideration exceeds $10,000, it shall not be valid, effective or binding upon the State until it has been approved by the State Comptroller and filed in his office. Comptroller’s approval of contracts let by the Office of General Services is required when such contracts exceed $85,000 (State Finance Law Section 163.6-a). However, such pre-approval shall not be required for any contract established as a centralized contract through the Office of General Services or for a purchase order or other transaction issued under such centralized contract.

4. WORKERS’ COMPENSATION BENEFITS. In accordance with Section 142 of the State Finance Law, this contract shall be void and of no force and effect unless the Contractor shall provide and maintain coverage during the life of this contract for the benefit of such employees as are required to be covered by the provisions of the Workers' Compensation Law.

5. NON-DISCRIMINATION REQUIREMENTS. To the extent required by Article 15 of the Executive Law (also known as the Human Rights Law) and all other State and Federal statutory and constitutional non-discrimination provisions, the Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, sex (including gender identity or expression), national origin, sexual orientation, military status, age, disability, predisposing genetic characteristics, marital status or domestic violence victim status. Furthermore, in accordance with Section 220-e of the Labor Law, if this is a contract for the construction, alteration or repair of any public building or public work or for the manufacture, sale or distribution of materials, equipment or supplies, and to the extent that this contract shall be performed within the State of New York, Contractor agrees that neither it nor its subcontractors shall, by reason of race, creed, color, disability, sex, or national origin: (a) discriminate in hiring against any New York State citizen who is qualified and available to perform the work; or (b) discriminate against or intimidate any employee hired for the performance of work under this contract. If this is a building service contract as defined in Section 230 of the Labor Law, then, in accordance with Section 239 thereof, Contractor agrees that neither it nor its subcontractors shall by reason of race, creed, color, national origin, age, sex or disability: (a) discriminate in hiring against any New York State citizen who is qualified and available to perform the work; or (b) discriminate against or intimidate any employee hired for the performance of work under this contract. Contractor is subject to fines of $50.00 per person per day for any violation of Section 220-e or Section 239 as well as possible termination of this contract and forfeiture of all moneys due hereunder for a second or subsequent violation.

6. WAGE AND HOURS PROVISIONS. If this is a public work contract covered by Article 8 of the Labor Law or a building service contract covered by Article 9 thereof, neither Contractor’s employees nor the employees of its subcontractors may be required or permitted to work more than the number of hours or days stated in said statutes, except as otherwise provided in the Labor Law and as set forth in prevailing wage and supplement schedules issued by the State Labor Department. Furthermore, Contractor and its subcontractors must pay at least the prevailing wage rate and pay or provide the prevailing supplements, including the premium rates for overtime pay, as determined by the State Labor Department in accordance with the Labor Law. Additionally, effective April 28, 2008, if this is a public work contract covered by Article 8 of the Labor Law, the Contractor understands and agrees that the filing of payrolls in a manner consistent with Subdivision 3-a of Section 220 of the Labor Law shall be a condition precedent to payment by the State of
any State approved sums due and owing for work done upon the project.

7. NON-COLLUSIVE BIDDING CERTIFICATION. In accordance with Section 139-d of the State Finance Law, if this contract was awarded based upon the submission of bids, Contractor affirms, under penalty of perjury, that its bid was arrived at independently and without collusion aimed at restricting competition. Contractor further affirms that, at the time Contractor submitted its bid, an authorized and responsible person executed and delivered to the State a non-collusive bidding certification on Contractor's behalf.

8. INTERNATIONAL BOYCOTT PROHIBITION. In accordance with Section 220-f of the Labor Law and Section 139-h of the State Finance Law, if this contract exceeds $5,000, the Contractor agrees, as a material condition of the contract, that neither the Contractor nor any substantially owned or affiliated person, firm, partnership or corporation has participated, is participating, or shall participate in an international boycott in violation of the federal Export Administration Act of 1979 (50 USC App. Sections 2401 et seq.) or regulations thereunder. If such Contractor, or any of the aforesaid affiliates of Contractor, is convicted or is otherwise found to have violated said laws or regulations upon the final determination of the United States Commerce Department or any other appropriate agency of the United States subsequent to the contract's execution, such contract, amendment or modification thereto shall be rendered forfeit and void. The Contractor shall so notify the State Comptroller within five (5) business days of such conviction, determination or disposition of appeal (2NYCRR 105.4).

9. SET-OFF RIGHTS. The State shall have all of its common law, equitable and statutory rights of set-off. These rights shall include, but not be limited to, the State's option to withhold for the purposes of set-off any moneys due to the Contractor under this contract up to any amounts due and owing to the State with regard to this contract, any other contract with any State department or agency, including any contract for a term commencing prior to the term of this contract, plus any amounts due and owing to the State for any other reason including, without limitation, tax delinquencies, fee delinquencies or monetary penalties relative thereto. The State shall exercise its set-off rights in accordance with normal State practices including, in cases of set-off pursuant to an audit, the finalization of such audit by the State agency, its representatives, or the State Comptroller.

10. RECORDS. The Contractor shall establish and maintain complete and accurate books, records, documents, accounts and other evidence directly pertinent to performance under this contract (hereinafter, collectively, "the Records"). The Records must be kept for the balance of the calendar year in which they were made and for six (6) additional years thereafter. The State Comptroller, the Attorney General and any other person or entity authorized to conduct an examination, as well as the agency or agencies involved in this contract, shall have access to the Records during normal business hours at an office of the Contractor within the State of New York or, if no such office is available, at a mutually agreeable and reasonable venue within the State, for the term specified above for the purposes of inspection, auditing and copying. The State shall take reasonable steps to protect from public disclosure any of the Records which are exempt from disclosure under Section 87 of the Public Officers Law (the "Statute") provided that: (i) the Contractor shall timely inform an appropriate State official, in writing, that said records should not be disclosed; and (ii) said records shall be sufficiently identified; and (iii) designation of said records as exempt under the Statute is reasonable. Nothing contained herein shall diminish, or in any way adversely affect, the State's right to discovery in any pending or future litigation.

11. IDENTIFYING INFORMATION AND PRIVACY NOTIFICATION. (a) Identification Number(s). Every invoice or New York State Claim for Payment submitted to a New York State agency by a payee, for payment for the sale of goods or services or for transactions (e.g., leases, easements, licenses, etc.) related to real or personal property must include the payee's identification number. The number is any or all of the following: (i) the payee’s Federal employer identification number, (ii) the payee’s Federal social security number, and/or (iii) the payee’s Vendor Identification Number assigned by the Statewide Financial System. Failure to include such number or numbers may delay payment. Where the payee does not have such number or numbers, the payee, on its invoice or Claim for Payment, must give the reason or reasons why the payee does not have such number or numbers.

(b) Privacy Notification. (1) The authority to request the above personal information from a seller of goods or services or a lessor of real or personal property, and the authority to maintain such information, is found in Section 5 of the State Tax Law. Disclosure of this information by the seller or lessor to the State is mandatory. The principal purpose for which the information is collected is to enable the State to identify individuals, businesses and others who have been delinquent in filing tax returns or may have understated their tax liabilities and to generally identify persons affected by the taxes administered by the Commissioner of Taxation and Finance. The information will be used for tax administration purposes and for any other purpose authorized by law. (2) The personal information is requested by the purchasing unit of the agency contracting to purchase the goods or services or lease the real or personal property covered by this contract or lease. The information is maintained in the Statewide Financial System by the Vendor Management Unit within the Bureau of State Expenditures, Office of the State Comptroller, 110 State Street, Albany, New York 12236.

12. EQUAL EMPLOYMENT OPPORTUNITIES FOR MINORITIES AND WOMEN. In accordance with Section 312 of the Executive Law and 5 NYCRR 143, if this contract is: (i) a written agreement or purchase order instrument, providing for a total expenditure in excess of $25,000.00,
WHEREBY A CONTRACTING AGENCY IS COMMITTED TO EXPEND OR DOES EXPEND FUNDS IN RETURN FOR LABOR, SERVICES, SUPPLIES, EQUIPMENT, MATERIALS OR ANY COMBINATION OF THE FOREGOING, TO BE PERFORMED FOR, OR RENDERED OR FURNISHED TO THE CONTRACTING AGENCY; OR (II) A WRITTEN AGREEMENT IN EXCESS OF $100,000.00 WHEREBY A CONTRACTING AGENCY IS COMMITTED TO EXPEND OR DOES EXPEND FUNDS FOR THE ACQUISITION, CONSTRUCTION, DEMOLITION, REPLACEMENT, MAJOR REPAIR OR RENOVATION OF REAL PROPERTY AND IMPROVEMENTS THEREON; OR (III) A WRITTEN AGREEMENT IN EXCESS OF $100,000.00 WHEREBY THE OWNER OF A STATE ASSISTED HOUSING PROJECT IS COMMITTED TO EXPEND OR DOES EXPEND FUNDS FOR THE ACQUISITION, CONSTRUCTION, DEMOLITION, REPLACEMENT, MAJOR REPAIR OR RENOVATION OF REAL PROPERTY AND IMPROVEMENTS THEREON FOR SUCH PROJECT, THEN THE FOLLOWING SHALL APPLY AND BY SIGNING THIS AGREEMENT THE CONTRACTOR CERTIFIES AND AFFIRMS THAT IT IS CONTRACTOR’S EQUAL EMPLOYMENT OPPORTUNITY POLICY THAT:

(A) THE CONTRACTOR WILL NOT DISCRIMINATE AGAINST EMPLOYEES OR APPLICANTS FOR EMPLOYMENT BECAUSE OF RACE, CREED, COLOR, NATIONAL ORIGIN, SEX, AGE, DISABILITY OR MARITAL STATUS, SHALL MAKE AND DOCUMENT ITS CONSCIENTIOUS AND ACTIVE EFFORTS TO EMPLOY AND UTILIZE MINORITY GROUP MEMBERS AND WOMEN IN ITS WORK FORCE ON STATE CONTRACTS AND WILL UNDERTAKE OR CONTINUE EXISTING PROGRAMS OF AFFIRMATIVE ACTION TO ENSURE THAT MINORITY GROUP MEMBERS AND WOMEN ARE AFFORDED EQUAL EMPLOYMENT OPPORTUNITIES WITHOUT DISCRIMINATION. AFFIRMATIVE ACTION SHALL MEAN RECRUITMENT, EMPLOYMENT, JOB ASSIGNMENT, PROMOTION, UPGRADINGS, DEMOTION, TRANSFER, LAYOFF, OR TERMINATION AND RATES OF PAY OR OTHER FORMS OF COMPENSATION;

(B) AT THE REQUEST OF THE CONTRACTING AGENCY, THE CONTRACTOR SHALL REQUEST EACH EMPLOYMENT AGENCY, LABOR UNION, OR AUTHORIZED REPRESENTATIVE OF WORKERS WITH WHICH IT HAS A COLLECTIVE BARGAINING OR OTHER AGREEMENT OR UNDERSTANDING, TO FURNISH A WRITTEN STATEMENT THAT SUCH EMPLOYMENT AGENCY, LABOR UNION OR REPRESENTATIVE WILL NOT DISCRIMINATE ON THE BASIS OF RACE, CREED, COLOR, NATIONAL ORIGIN, SEX, AGE, DISABILITY OR MARITAL STATUS AND THAT SUCH UNION OR REPRESENTATIVE WILL AFFIRMATIVELY COOPERATE IN THE IMPLEMENTATION OF THE CONTRACTOR’S OBLIGATIONS HEREIN; AND

(C) THE CONTRACTOR SHALL STATE, IN ALL SOLICITATIONS OR ADVERTISEMENTS FOR EMPLOYMENT, THAT, IN THE PERFORMANCE OF THE STATE CONTRACT, ALL QUALIFIED APPLICANTS WILL BE AFFORDED EQUAL EMPLOYMENT OPPORTUNITIES WITHOUT DISCRIMINATION BECAUSE OF RACE, CREED, COLOR, NATIONAL ORIGIN, SEX, AGE, DISABILITY OR MARITAL STATUS.

CONTRACTOR WILL INCLUDE THE PROVISIONS OF "A", "B", AND "C" ABOVE, IN EVERY SUBCONTRACT OVER $25,000.00 FOR THE CONSTRUCTION, DEMOLITION, REPLACEMENT, MAJOR REPAIR, RENOVATION, PLANNING OR DESIGN OF REAL PROPERTY AND IMPROVEMENTS THEREON (THE "WORK") EXCEPT WHERE THE WORK IS FOR THE BENEFICIAL USE OF THE CONTRACTOR. SECTION 312 DOES NOT APPLY TO: (I) WORK, GOODS OR SERVICES UNRELATED TO THIS CONTRACT; OR (II) EMPLOYMENT OUTSIDE NEW YORK STATE. THE STATE SHALL CONSIDER COMPLIANCE BY A CONTRACTOR OR SUBCONTRACTOR WITH THE REQUIREMENTS OF ANY FEDERAL LAW CONCERNING EQUAL EMPLOYMENT OPPORTUNITY WHICH EFFECTUATES THE PURPOSE OF THIS SECTION. THE CONTRACTING AGENCY SHALL DETERMINE WHETHER THE IMPOSITION OF THE REQUIREMENTS OF THE PROVISIONS HEREOF DUPLICATE OR CONFLICT WITH ANY SUCH FEDERAL LAW AND IF SUCH DUPLICATION OR CONFLICT EXISTS, THE CONTRACTING AGENCY SHALL WAIVE THE APPLICABILITY OF SECTION 312 TO THE EXTENT OF SUCH DUPLICATION OR CONFLICT. CONTRACTOR WILL COMPLY WITH ALL DUTY PROMULGATED AND LAWFUL RULES AND REGULATIONS OF THE DEPARTMENT OF ECONOMIC DEVELOPMENT’S DIVISION OF MINORITY AND WOMEN’S BUSINESS DEVELOPMENT PERTAINING HERETO.


14. GOVERNING LAW. THIS CONTRACT SHALL BE GOVERNED BY THE LAWS OF THE STATE OF NEW YORK EXCEPT WHERE THE FEDERAL SUPREMACY CLAUSE REQUIRES OTHERWISE.

15. LATE PAYMENT. TIMELINESS OF PAYMENT AND ANY INTEREST TO BE PAID TO CONTRACTOR FOR LATE PAYMENT SHALL BE GOVERNED BY ARTICLE 11-A OF THE STATE FINANCE LAW TO THE EXTENT REQUIRED BY LAW.

16. NO ARBITRATION. DISPUTES INVOLVING THIS CONTRACT, INCLUDING THE BREACH OR ALLEGED BREACH THEREOF, MAY NOT BE SUBMITTED TO BINDING ARBITRATION (EXCEPT WHERE STATUTORILY AUTHORIZED), BUT MUST, INSTEAD, BE HEARD IN A COURT OF COMPETENT JURISDICTION OF THE STATE OF NEW YORK.

17. SERVICE OF PROCESS. IN ADDITION TO THE METHODS OF SERVICE ALLOWED BY THE STATE CIVIL PRACTICE LAW & RULES ("CPLR"), CONTRACTOR HEREBY CONSENTS TO SERVICE OF PROCESS UPON IT BY REGISTERED OR CERTIFIED MAIL, RETURN RECEIPT REQUESTED. SERVICE HEREUNDER SHALL BE COMPLETE UPON CONTRACTOR’S ACTUAL RECEIPT OF PROCESS OR UPON THE STATE'S RECEIPT OF THE RETURN THEREOF BY THE UNITED STATES POSTAL SERVICE AS REFUSED OR UNDELIVERABLE. CONTRACTOR MUST PROMPTLY NOTIFY THE STATE, IN WRITING, OF EACH AND EVERY CHANGE OF ADDRESS TO WHICH SERVICE OF PROCESS CAN BE MADE. SERVICE BY THE STATE TO THE LAST KNOWN ADDRESS SHALL BE SUFFICIENT. CONTRACTOR WILL HAVE THIRTY (30) CALENDAR DAYS AFTER SERVICE HEREUNDER IS COMPLETE IN WHICH TO RESPOND.

18. PROHIBITION ON PURCHASE OF TROPICAL HARDWOODS. THE CONTRACTOR CERTIFIES AND WARRANTS THAT ALL WOOD PRODUCTS TO BE USED UNDER THIS CONTRACT AWARD WILL BE IN ACCORDANCE WITH, BUT NOT LIMITED TO, THE SPECIFICATIONS AND PROVISIONS OF SECTION 165 OF THE STATE FINANCE LAW, (USE OF TROPICAL HARDWOODS) WHICH PROHIBITS PURCHASE AND USE OF TROPICAL HARDWOODS, UNLESS SPECIFICALLY EXEMPTED, BY THE STATE OR ANY GOVERNMENTAL AGENCY OR POLITICAL SUBDIVISION OR PUBLIC BENEFIT CORPORATION. QUALIFICATION FOR AN EXEMPTION UNDER THIS LAW WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH TO MEET WITH THE APPROVAL OF THE STATE.
In addition, when any portion of this contract involving the use of woods, whether supply or installation, is to be performed by any subcontractor, the prime Contractor will indicate and certify in the submitted bid proposal that the subcontractor has been informed and is in compliance with specifications and provisions regarding use of tropical hardwoods as detailed in §165 State Finance Law. Any such use must meet with the approval of the State; otherwise, the bid may not be considered responsive. Under bidder certifications, proof of qualification for exemption will be the responsibility of the Contractor to meet with the approval of the State.

19. MACBRIDE FAIR EMPLOYMENT PRINCIPLES. In accordance with the MacBride Fair Employment Principles (Chapter 807 of the Laws of 1992), the Contractor hereby stipulates that the Contractor either (a) has no business operations in Northern Ireland, or (b) shall take lawful steps in good faith to conduct any business operations in Northern Ireland in accordance with the MacBride Fair Employment Principles (as described in Section 165 of the New York State Finance Law), and shall permit independent monitoring of compliance with such principles.

20. OMNIBUS PROCUREMENT ACT OF 1992. It is the policy of New York State to maximize opportunities for the participation of New York State business enterprises, including minority and women-owned business enterprises as bidders, subcontractors and suppliers on its procurement contracts.

Information on the availability of New York State subcontractors and suppliers is available from:

NYS Department of Economic Development
Division for Small Business
Albany, New York 12245
Telephone: 518-292-5100
Fax: 518-292-5884
email: opa@esd.ny.gov

A directory of certified minority and women-owned business enterprises is available from:

NYS Department of Economic Development
Division of Minority and Women's Business Development
633 Third Avenue
New York, NY 10017
212-803-2414
email: mwbecertification@esd.ny.gov
https://ny.newnycontracts.com/FrontEnd/VendorSearchPublic.asp

The Omnibus Procurement Act of 1992 requires that by signing this bid proposal or contract, as applicable, Contractors certify that whenever the total bid amount is greater than $1 million:

(a) The Contractor has made reasonable efforts to encourage the participation of New York State Business Enterprises as suppliers and subcontractors, including certified minority and women-owned business enterprises, on this project, and has retained the documentation of these efforts to be provided upon request to the State;

(b) The Contractor has complied with the Federal Equal Opportunity Act of 1972 (P.L. 92-261), as amended;

(c) The Contractor agrees to make reasonable efforts to provide notification to New York State residents of employment opportunities on this project through listing any such positions with the Job Service Division of the New York State Department of Labor, or providing such notification in such manner as is consistent with existing collective bargaining contracts or agreements. The Contractor agrees to document these efforts to and provide said documentation to the State upon request; and

(d) The Contractor acknowledges notice that the State may seek to obtain offset credits from foreign countries as a result of this contract and agrees to cooperate with the State in these efforts.

21. RECIPROCITY AND SANCTIONS PROVISIONS. Bidders are hereby notified that if their principal place of business is located in a country, nation, province, state or political subdivision that penalizes New York State vendors, and if the goods or services they offer will be substantially produced or performed outside New York State, the Omnibus Procurement Act 1994 and 2000 amendments (Chapter 684 and Chapter 383, respectively) require that they be denied contracts which they would otherwise obtain. NOTE: As of May 15, 2002, the list of discriminatory jurisdictions subject to this provision includes the states of South Carolina, Alaska, West Virginia, Wyoming, Louisiana and Hawaii. Contact NYS Department of Economic Development for a current list of jurisdictions subject to this provision.

22. COMPLIANCE WITH NEW YORK STATE INFORMATION SECURITY BREACH AND NOTIFICATION ACT. Contractor shall comply with the provisions of the New York State Information Security Breach and Notification Act (General Business Law Section 899-aa; State Technology Law Section 208).

23. COMPLIANCE WITH CONSULTANT DISCLOSURE LAW. If this is a contract for consulting services, defined for purposes of this requirement to include analysis, evaluation, research, training, data processing, computer programming, engineering, environmental, health, and mental health services, accounting, auditing, paralegal, legal or similar services, then, in accordance with Section 163 (4-g) of the State Finance Law (as amended by Chapter 10 of the Laws of 2006), the Contractor shall timely, accurately and if the goods or services they offer will be substantially produced or performed outside New York State, the Omnibus Procurement Act 1994 and 2000 amendments (Chapter 684 and Chapter 383, respectively) require that they be denied contracts which they would otherwise obtain. NOTE: As of May 15, 2002, the list of discriminatory jurisdictions subject to this provision includes the states of South Carolina, Alaska, West Virginia, Wyoming, Louisiana and Hawaii. Contact NYS Department of Economic Development for a current list of jurisdictions subject to this provision.
the contract, the Department of Civil Service and the State Comptroller.

24. PROCUREMENT LOBBYING. To the extent this agreement is a "procurement contract" as defined by State Finance Law Sections 139-j and 139-k, by signing this agreement the contractor certifies and affirms that all disclosures made in accordance with State Finance Law Sections 139-j and 139-k are complete, true and accurate. In the event such certification is found to be intentionally false or intentionally incomplete, the State may terminate the agreement by providing written notification to the Contractor in accordance with the terms of the agreement.

25. CERTIFICATION OF REGISTRATION TO COLLECT SALES AND COMPENSATING USE TAX BY CERTAIN STATE CONTRACTORS, AFFILIATES AND SUBCONTRACTORS. To the extent this agreement is a contract as defined by Tax Law Section 5-a, if the contractor fails to make the certification required by Tax Law Section 5-a or if during the term of the contract, the Department of Taxation and Finance or the covered agency, as defined by Tax Law 5-a, discovers that the certification, made under penalty of perjury, is false, then such failure to file or false certification shall be a material breach of this contract and this contract may be terminated, by providing written notification to the Contractor in accordance with the terms of the agreement, if the covered agency determines that such action is in the best interest of the State.

26. IRAN DIVESTMENT ACT. By entering into this Agreement, Contractor certifies in accordance with State Finance Law §165-a that it is not on the “Entities Determined to be Non-Responsive Bidders/Offerers pursuant to the New York State Iran Divestment Act of 2012” (“Prohibited Entities List”) posted at: http://www.ogs.ny.gov/about/regs/docs/ListofEntities.pdf

Contractor further certifies that it will not utilize on this Contract any subcontractor that is identified on the Prohibited Entities List. Contractor agrees that should it seek to renew or extend this Contract, it must provide the same certification at the time the Contract is renewed or extended. Contractor also agrees that any proposed Assignee of this Contract will be required to certify that it is not on the Prohibited Entities List before the contract assignment will be approved by the State.

During the term of the Contract, should the state agency receive information that a person (as defined in State Finance Law §165-a) is in violation of the above-referenced certifications, the state agency will review such information and offer the person an opportunity to respond. If the person fails to demonstrate that it has ceased its engagement in the investment activity which is in violation of the Act within 90 days after the determination of such violation, then the state agency shall take such action as may be appropriate and provided for by law, rule, or contract, including, but not limited to, imposing sanctions, seeking compliance, recovering damages, or declaring the Contractor in default.

The state agency reserves the right to reject any bid, request for assignment, renewal or extension for an entity that appears on the Prohibited Entities List prior to the award, assignment, renewal or extension of a contract, and to pursue a responsibility review with respect to any entity that is awarded a contract and appears on the Prohibited Entities list after contract award.