

FRANKLIN AVENUE HOUSE

WATERTOWN, MINNESOTA

PROJECT MANUAL

CONSTRUCTION DOCUMENTS

OCTOBER 22, 2024

LHB PROJECT NUMBER 240559

Carver County CDA

Chaska, Minnesota



Minneapolis, Minnesota

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**SECTION 00 0101
PROJECT TITLE PAGE**

PROJECT:

FRANKLIN AVENUE HOUSE

ADDRESS:

413 Franklin Avenue Northwest
Watertown, Minnesota 55388

OWNER:

CARVER COUNTY CDA

ADDRESS:

705 North Walnut Street
Chaska, Minnesota 55318

PROJECT MANAGERS

Melodie Bridgeman: melodieb@carvercda.org

Chris Rotell: chrisr@carvercda.org

DESIGN TEAM:

LHB, INC.

Address: 701 Washington Avenue North, Suite 200, Minneapolis, Minnesota 55401

Main Contact: Andy Madson

Email: Andy.Madson@LHBcorp.com

MATTSON MACDONALD YOUNG INC.

Address: 105 South 5th Avenue Suite 100, Minneapolis, Minnesota 55401

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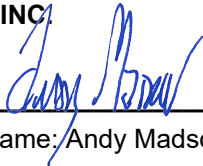
**SECTION 00 0105
CERTIFICATIONS PAGE**

**PROJECT: FRANKLIN AVENUE HOUSE
WATERTOWN, MINNESOTA**

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and I am a duly licensed Architect, Professional Engineer, or Landscape Architect under the laws of the state of Minnesota.

ARCHITECT

LHB, INC.



Name: Andy Madson

License No. 50555

Date: October 22, 2024

STRUCTURAL ENGINEER

MATTSON MACDONALD YOUNG, INC.



Name: Isaac E. Blik

License No. 61184

Date: October 22, 2024

CIVIL ENGINEER

LHB, INC.



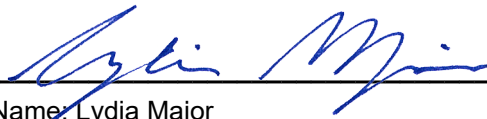
Name: Jordan Cabak

License No. 52249

Date: October 22, 2024

LANDSCAPE ARCHITECT

LHB, INC.



Name: Lydia Major

License No. 46911

Date: October 22, 2024

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CARVER COUNTY
COMMUNITY
DEVELOPMENT
AGENCY

RFP# 2024-02

REQUEST FOR PROPOSAL PUBLISHED OCTOBER 22, 2024

CONSTRUCTION SERVICES FOR
NEW CONSTRUCTION WORK AT "FRANKLIN AVENUE HOUSE"

Project Address:

413 FRANKLIN AVENUE NORTHWEST
WATERTOWN, MINNESOTA 55388

Proposal Due Date:

Date/Time: **NOVEMBER 7, 2024, AT 4:00 PM CST**

Location Due:

CARVER COUNTY CDA
705 N WALNUT STREET
CHASKA, MINNESOTA 55318

Project Managers:

Melodie Bridgeman

melodieb@carvercda.org

Chris Rotell

chrisr@carvercda.org

****BID SECURITY REQUIRED****

**REQUEST FOR PROPOSAL
CONSTRUCTION SERVICES FOR FRANKLIN AVENUE HOUSE**

The Carver County Community Development Agency (hereafter referred to as CDA) is soliciting proposals from qualified contractors that are licensed and insured to conduct business within the State of Minnesota. Contractors shall provide construction services for the work described as new construction of a single-family home, located in Watertown, Minnesota. The scope of work is for, but not limited to the project known as "Franklin Avenue House" which includes the new construction of a single-family home including 4 bedrooms and 1 ¾ bath, slab-on-grade front porch, a two-stall garage, related site improvements, and likely removal of a foundation system from a previous home on the site. Refer to Section 00 1000 Summary for additional information.

All work shall comply with the conditions set forth in this document and as contained within the project details, specifications, and any attachments contained herein. This contract requires the Contractor to furnish all labor, materials and permits necessary to complete the project as specified herein.

All questions must be submitted in writing. All questions submitted will be answered five (5) business days prior to the Proposal due date. Proposals will be received by the CDA Office at 705 Walnut St. N. Chaska, MN on **November 6, 2024 at 4:00 PM CST**. Delivery of Proposals by fax or email is **not** acceptable. Proposals received after the due date and time will **not** be considered and will be returned unopened to the Respondent. **Please provide two copies of the Proposals (one original and one copy of the original) in a sealed envelope indicating RFP# 2024-02.** Proposals will only be accepted from those Contractors that can establish, to the satisfaction of the CDA, the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Proposal Documents and provide satisfactory evidence of, and references for, completion of projects **in the capacity as a Contractor of similar scope which is defined as** new residential units and site improvements with a total value of at least one million dollars (\$1,000,000) in the MSP area within the last five (5) years .

The Proposal shall be accompanied by a certified check or bank draft, payable to the CDA, or a satisfactory Bid Bond executed by the Respondent and a Surety that is acceptable to the Federal Government, in an amount equal to Five Percent (5%) of the Proposal. Failure to comply with this requirement may cause the Proposal to be considered non-responsive, and subject to rejection. The term of this Contract shall be for a period of eight (8) months from date of the Notice to Proceed (NTP). The Contract will be awarded to the Responsive and Responsible Respondent offering the best combination of qualifications and price, who meets the **Qualification Requirements outlined in Part I Section G**. No Respondent may withdraw or alter their Proposal within Sixty (60) days after the Proposal opening. CDA maintains the right to reject any or all Proposals. CDA has the right to waive informalities and irregularities in a Proposal received and to accept the Proposal that, in CDA's judgment, is in CDA's best interests. A Proposal is defined as a complete and properly executed written proposal to do the Work for the sums stipulated therein, submitted in accordance with the Proposal Documents. The Proposal Documents include the submittal Requirements, the proposed Contract Documents and any Reference Documents. CDA's selection committee shall review the Respondents' qualifications and price in accordance with the published Selection Criteria. Based on these criteria, the committee will choose the Respondent deemed "qualified" with the best combination of factors and price who will be selected to enter into a contract for this project.

**REQUEST FOR PROPOSAL NO. 2024-02
GENERAL CONTRACTING SERVICES
FOR FRANKLIN AVENUE HOUSE**

I. GENERAL

A. Introduction

1. The Carver County Community Development Agency (hereinafter referred to as "CDA") is soliciting proposals from qualified and licensed Contractors (hereinafter referred to as "Respondents") for the the project known as "Franklin Avenue House" which includes the new construction of a single-family home including 4 bedrooms and 1 ¾ bath, slab-on-grade front porch, a two-stall garage, related site improvements, and likely removal of a foundation system from a previous home on the site.
2. All work in connection with this Request for Proposal (RFP) shall comply with the project details contained herein, and the scope of work, (collectively hereinafter referred to as the "Construction Bid Documents"). Additional project information is contained in the General Requirements section below. The information provided in this RFP will be incorporated into the contract as part of the specifications for the project.
3. Other details related to this project, if applicable: Refer to Section 01 1000 Summary of Work
4. Respondent with the best combination of qualification factors and price will be chosen by a project selection committee to serve as "Contractor" for this project.

B. Property Description

1. The site is located at 413 Franklin Avenue Northwest in Watertown, MN.

C. Questions

1. All questions regarding the project and supporting documentations must be submitted to Melodie Bridgeman of the CDA in writing via email to melodieb@carvercda.org. The deadline for submitting any and all questions is five (5) business days prior to the due date.

D. Due Date

1. Proposals will be received by at the CDA office located at 705 Walnut St. Chaska, MN 55318 no later than **November 7, 2024 at 4:00 PM CST.**
2. **Please provide total of two (2) copies, One (1) Original, One (1) Copy. Delivery of proposals by fax or email is not acceptable.** Proposals received after the due date and time may not be considered, and if disqualified they will be returned unopened to the Respondent.

E. Addendum

1. In the event this solicitation is amended, all terms and conditions which are not modified remain unchanged.
2. Respondents shall acknowledge receipt of any Addendum to this solicitation by acknowledging receipt of addenda on the Proposal Form. Failure to acknowledge receipt of any Addendum will result in the rejection of Respondent's proposal if the Addendum contained information that substantively changed CDA's requirements.

F. Minimum Qualifications

1. Proposals will only be accepted from Respondents who provide satisfactory evidence of, and references for completion of projects of similar scope of work.
2. The Proposal shall be accompanied by a certified check or bank draft, payable to the CDA, or a satisfactory Bid Bond executed by the Respondent and a Surety that is acceptable to the Federal Government, in an amount equal to Five Percent (5%) of the Proposal. Failure to comply with this requirement may cause the Proposal to be considered non-responsive, and subject to rejection.
3. The successful Respondent will be required to furnish and pay for satisfactory Performance and Payment Bonds for One Hundred Percent (100%) of the Contract value.
4. Contractor shall provide a copy of all current and valid Federal and State licensing for the Company and its employees necessary to perform the scope of work contained herein. Provide your own documents.
5. Other qualifications for this project:
 - i the contractors must have experience with new residential units and site improvements with a total value of at least one million dollars (\$1,000,000) in the MSP area within the last five (5) years.
 - ii Refer to Section 00 4530 Responsible Contractor Verification and Certification of Compliance for additional requirements.

The Qualification Information listed above shall be submitted with the Contractor's Proposal. Failure to provide all required documentation with packet submission may be deemed an incomplete submission and subject to disqualification.

CDA reserves the right, at its sole discretion, to accept or reject any and all proposals received as a result of this RFP; to waive minor irregularities; and to conduct discussions with all responsible Respondents, in any manner necessary, to serve the best interest of CDA. CDA reserves the right to request additional information from any or all Respondents if necessary to clarify that which is contained in the submissions.

While it is the present intention of CDA to carry out the development of the property as identified in this RFP as soon as practicable, nothing contained in this RFP shall be construed as a warranty or commitment on the part of CDA to be obligated to develop all or any portion of the property. CDA shall not be liable for any costs,

damages, injuries, or liabilities caused to or suffered or incurred by the Respondent, its successor or assigns in connection with, or as a result of CDA's inability to meet deadlines or any preliminary schedules.

G. Selection

CDA's selection committee will review the Respondents' qualifications and price. Based on these criteria, the committee will choose those Respondents deemed "qualified." The Respondent with the best combination of factors and price will be selected to enter into a contract for this project.

1. Submission Requirements

- i In addition to the minimum qualifications (Part I, Section F), each Respondent must submit the following:
 - a. The Proposal Submittal and the Contractor's Statement of Qualifications. If there are any claims or suits listed, please provide name of project, claimant, reason, and status. Please be sure to list projects, completed or in progress, that best demonstrate competence to perform work similar to that required here. AIA A305-2020 to be completed and returned with bid.
 - b. Brochure and Supporting Materials. Please provide supporting materials, such as photographs, sample schedules, and other brochures to assist CDA in evaluating your firm.
 - c. Responsible Individual. Please list the name, title, email address, and telephone number of the person empowered to speak for the firm in connection with its qualifications, policy, and financial and contractual matters.

No Respondent may alter their proposal after submission.

Failure to provide all required documentation with packet submission will be deemed an incomplete submission and subject to disqualification. Proposals should be submitted in the order noted above.

2. Selection Criteria

- i CDA will use the following criteria to evaluate the proposals and will rate each Respondent accordingly:
 - d. Completion of previous projects (10%);
 - e. Demonstrated ability for on-time completion (10%);
 - f. Financial Strength (10%);
 - g. Experience and references (30%)
 - h. Technical requirement met (10%)
 - i. Price (30%)

II. SCOPE OF WORK

A. General Scope of Work

1. CDA seeks to enter into a contract with a General Contractor (hereinafter "Contractor") to construct a new single-family home, a two-stall garage and related site work at 413 Franklin Avenue NW, Watertown, MN.
2. Before commencement of any work, the selected Contractor must furnish CDA with payment and performance bond documents and certificates for any required insurance at no additional cost to CDA.
3. The Contractor shall provide all labor, materials, equipment, transportation, and permits necessary to perform the work as set forth in the Request for Proposal, Scope of Work, and Construction Bid Documents.
4. Upon issuance of the Notice to Proceed and before commencing work, the Contractor shall visit the site to verify field conditions. Should variations arise between the field conditions and the construction documents, the Contractor must notify CDA's Project Manager, in writing, of any discrepancies immediately.
 - a. Any changes or additional work done without the prior written consent of the Project Manager shall be at the Contractors' risk.
 - b. CDA reserves the right to add to or delete any work specified in this contract.
 - c. The Contractor shall coordinate all work with the Project Manager.

B. General Requirements

1. Code Compliance and Inspections

- a. The Contractor shall ensure that all work is performed in accordance with State and local codes that apply to Contractor's Scope of Work. Any work not in accordance with codes shall be corrected by the Contractor at no additional cost to CDA.
- b. The Contractor shall schedule all necessary inspections required by State and local codes, with the appropriate code enforcement staff and notify the CDA Project Manager of inspection results in writing within seventy-two (72) hours of receiving such reports.

2. Contract Documents

- a. The parties shall utilize AIA Construction Contract forms and General Conditions with supplemental conditions applicable to CDA projects. CDA intends to use the following **amended AIA Contract Documents: - A104-2017, Standard Abbreviated Form of Agreement Between Owner and Contractor.**

b. Insurance

- i. Contractor must maintain, or cause subcontractors that perform any work for the Project to maintain during the process of construction or rehabilitation insurance in types and amounts specified in Exhibit 2. Contractor shall ensure that any carrier delivering Equipment to the Project maintain said insurance. All policies of insurance, other than professional liability and worker's compensation, shall name the Owner as an additional named insured.

c. Permits

- i. Contractor is responsible for assuring that all necessary trade permits are obtained (as applicable) for work requested by the Contract Administrator or authorized CDA representative. The cost of trade permits shall be included in the Contractor's proposal. CDA shall provide the building permit only.
- ii. Contractor is responsible for proper posting of all permits on the project sites per Carver County requirements. Copies of all permits will be provided to the CDA Project Manager or authorized CDA representative prior to beginning any work.
- iii. All permits fees are to be included in contract price.

3. Requirements

- a. No work will be performed before 8:30 a.m. or later than 5:00 p.m. Monday through Friday unless written permission is given by the Project Manager.
- b. Work can be performed on Saturdays only with written permission from the Project Manager.
- c. The staging area(s) will be discussed and approved between the Construction Manager and the General Contractor.
- d. No utilities shut-down other than between the hours of 9:00 a.m. and 4:00 p.m. Monday through Friday.
- e. Except in the case of an emergency, no work will be performed on Sundays or holidays.
- f. Contractor shall be required to attend pre-construction meetings, as directed by Owner, to discuss construction operations. Contractor shall provide a detailed schedule of work.
- g. Contractor shall provide for personnel identification of all staff to ensure Owner is aware of construction staff.
- h. Any discrepancies or suspected errors in the drawings or specifications shall be immediately brought to the attention of the CDA Construction Manager.

- i. All work is to be performed under OSHA Code, International Existing Building Code (IEBC), ICC Electrical Code, and Carver County Code.
- j. The General Contractor will be responsible for assuring that MEPs obtain trade permits. The cost of trade permits is included as part of the scope of work.
- k. All accidents (either bodily injury or damage to the property) must be reported to CDA immediately.
- l. The health and safety of the residents is of the highest priority during the construction of this project.
- m. Contractor must provide 24-hour emergency contact information.
- n. The Contractor or their subcontractors shall obtain all required permits (trade and building) for the work to be performed. Copies of all permits will be provided to the CDA Project Manager.
- o. Other requirements specific to this project but not yet listed: N/A

4. Warranty

- a. All work shall be performed in a professional and safe manner according to OSHA safety standards as well as all manufacturers' specifications.
- b. Upon completion of work, Contractor shall provide copies of all manufacturer warranties and operating manuals on materials and equipment to the CDA Project Manager on a per-unit basis. In addition, the Contractor shall provide a one (1)-year warranty on all work performed.
- c. All materials shall be new, as per specifications, and are to be installed according to the manufacturers' instructions.
- d. In the event any work performed under the Contract does not meet manufacturer's installation guidelines and specifications; the Contractor shall be notified in writing of the deficiency. Corrective action shall commence within 24 hours of notification for all work found unacceptable to CDA's designated representative by the Contractor at no additional cost to CDA. In the event corrective action is not taken in a timely manner, as determined by the Contract Administrator or authorized CDA representative, CDA reserves the right to terminate the Contract or any portions thereof.

5. Fair Housing

- a. Contractor acknowledges and understands that Carver County CDA is a housing provider that complies with and operates within the requirements of Federal, State, and local fair housing law. Carver County CDA does not discriminate against any person on the basis of race, color, religion, sex, handicap, familial status, or national origin.

- b. Sexual harassment is a form of discrimination that violates fair housing law. Carver County CDA does not tolerate sexual harassment of residents or employees.
- c. Contractor agrees to comply with all Federal, State, and local fair housing laws. Contractor understands that any act of discrimination or sexual harassment in violation of these laws shall constitute a breach of this agreement.

6. Emergency Contact

- a. Prior to the commencement of work the Contractor shall provide the CDA Project Manager and Construction Manager with twenty-four (24) hour emergency contact names and telephone numbers for two (2) individuals.

7. Change Orders

- a. Any request for changes to the Scope of Work after contract is awarded must be made in writing to CDA's Project Manager. This includes any work that would increase or decrease the cost of the work, any additions or subtractions to the quantity of materials of work and any change that would affect the completion date of the contract. Any changes made without a signed change order from CDA will be at the sole risk of the Contractor and will be done at no additional cost to CDA.
- b. All items or hidden damage discovered that may necessitate a Change Order Request from the Contractor must be documented by photographs and accompanied by detailed descriptions.

C. Project Requirements

- 1. Upon submitting their proposal, the Respondent warrants that it has visited the job site and familiarized itself with the work plans and specifications (Construction Bid Documents) as may apply to this Contract.

D. Contract Term

- 1. The time to complete this work shall be eight (8) months from the date of the Notice to Proceed.
- 2. After the contract has been signed by CDA and the Contractor, the Contractor shall, within fourteen (14) days, hold a pre-construction meeting with the CDA Project Manager to establish a work schedule. This schedule shall include an outline of the work, scheduled start and completion dates, and shall be in accordance with the requirements in the project specifications.

E. Other Contract Terms

- 1. Utilities shall be paid for by Contractor. Contractor is responsible for temporary toilet and trash removal including construction materials per Carver County codes.

2. Contractor is responsible for Builders Risk Insurance, to be included in the proposal.
3. No construction work is to take place earlier than 8:30 a.m. or after 5:00 p.m. Monday through Friday. No additional work hours, including weekends and holidays, will be permitted without prior written approval from the Project Manager.

F. Liquidated Damages

1. Failure to complete the work as specified in the contract may result in Liquidated Damages in the amount \$150 per calendar day for each day that the work remains incomplete after the contract completion date until such time as Substantial Completion of the contract is achieved.

G. CDA Project and Construction Managers

2. The designated CDA Project Managers are Melodie Bridgeman and Chris Rotell.

H. Exhibits

- 1 Proposal Submittal
- 2 AIA A305-2020 to be completed and returned with bid.
- 3 Insurance Requirements
- 4 Non-Collusion Affidavits

EXHIBIT 1**PROPOSAL SUBMITTAL**

Proposal of _____ (hereinafter called "Respondent") a corporation/partnership/individual licensed to do business in the State of Minnesota to the Carver County Community Development Agency (hereinafter called "CDA").

The undersigned, having familiarized themselves with the conditions affecting the cost of the work, and the Specifications (including, as applicable, Request For Proposal, Instructions to Respondents, General Conditions of Contract Between CDA and Contractor, Scope of Work, Proposal Submission, Bid Bond, Non-Collusive Affidavit, Attachments, Technical Specifications, and Drawings) and any Addendum/Addenda as prepared by CDA and is on file in the Procurement Office, hereby propose to furnish all labor, materials, equipment and services required to complete the work as follows;

PROPOSAL:

The purpose of this Proposal is to provide single source construction from qualified General Contractors, who are licensed and insured to conduct business within the State of Minnesota. The General Contractor shall provide single source construction for the new construction of Franklin Avenue House. All work shall comply with the conditions set forth in this document and as contained within the project details, specifications, and any attachments contained herein. This Contract requires the Contractor to furnish all labor, materials and permits necessary to complete the project as specified herein. In the event a Contractor leaves a Proposal line item blank, the Proposal shall be deemed unresponsive and subsequently disqualified.

The undersigned, having received and familiarized themselves with the conditions affecting the cost of the work, the Specifications/Scope of Work (including, as applicable, this request for proposal, the form of payment and performance bond, the form of contract, the General Conditions, the Construction Bid Documents, and Drawings) and any Addendum/Addenda No(s). as prepared by CDA or the Architect, which is on file in the Purchasing Office, and having visited the site and become familiar with local conditions under which the work is to be performed, hereby propose to furnish all labor, materials, equipment and services required to complete the work as follows:

PROPOSAL AMOUNT: the project known as the "Franklin Avenue House" which includes the cost to complete the new construction of a single-family home including 4 bedrooms and 1 ¾ bath, slab-on-grade front porch, a two-stall garage, related site improvements, and likely removal of a foundation system from a previous home on the site, as noted in the Project Manual and Project Documents **for the "Total Price" of:**

_____ (Dollars) (\$ _____)

(The amount shall be shown in both words and figures. In the case of a discrepancy, the amount shown in words will govern.)

A. Provide your own documentation with a cost breakout similar to the Construction Specifications Institute (CSI) Divisions, if applicable to the project. Your breakout shall provide detailed information of the unit prices, labor, transportation, and permits necessary to complete. The Overhead, profit, general conditions and the like are to be broken out by line item (not lumped into the appliance cost for example).

B. UNIT PRICES

The following are Unit Prices for specific portions of the Work as listed. The following is the list of Unit Prices:

1. Unit Price No. 1: Removal of Unsuitable Soil Materials
 - a. \$_____ per cubic yard, in place volume.
2. Unit Price No. 2: General Fill (approved on-site material)
 - a. \$_____ per cubic yard, in place volume.
3. Unit Price No. 3: General Fill (off-site material):
 - a. \$_____ per cubic yard, in place volume.
4. Unit Price No. 4: Removal of Existing Concrete Building Slab and Foundation:
 - a. \$_____ per ton, concrete hauled off site

C. ALTERNATES

The following are Alternates as described in Section 01 2300 - Alternates. The following is the list of Alternate pricing. Circle ADD or DEDUCT next to each line.

- | | |
|--|----------------------|
| 1. ALTERNATE No. 1: Concrete Walk | Add / Deduct \$_____ |
| 2. ALTERNATE No. 2: Backyard Patio | Add / Deduct \$_____ |
| 3. ALTERNATE No. 3: Asphalt Driveway | Add / Deduct \$_____ |
| 4. ALTERNATE No. 4: Concrete Apron | Add / Deduct \$_____ |
| 5. ALTERNATE No. 5: Finished Basement | Add / Deduct \$_____ |
| 6. ALTERNATE No. 6: Hayfield Vinyl Classic Windows | Add / Deduct \$_____ |
| 7. ALTERNATE No. 7: James Hardie Siding | Add / Deduct \$_____ |

D. WORK NOT OTHERWISE SPECIFIED (NOS):

All other work **Not Otherwise Specified (NOS)** within the scope of this Proposal Document shall be agreed to in writing by CDA as a Change Order as defined in Section II, 9. The hourly rates for any work NOS shall require an estimate. Pricing provided in this section will include all labor, transportation, and overhead necessary to complete any work defined as NOS (Not Otherwise Specified) within this document and attachments.

E. ADDENDA

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

1. Addendum # _____ Dated _____.
2. Addendum # _____ Dated _____.
3. Addendum # _____ Dated _____.

F. RESPONDENT INFORMATION:

1. Respondent understands that all alternates and unit prices must be provided in the appropriate spaces. The unit prices shall include all labor, materials, overhead, profit, insurance, etc. to cover the work specified.
2. The Respondent understands that the CDA reserves the right to reject any or all Proposals and to waive any informality in the selection process. The Respondent agrees that this Proposal shall be good and may not be withdrawn or altered for a period of Sixty (60) Calendar Days after the scheduled closing time for receiving Proposals.
3. The Respondent hereby agrees to commence work under this Contract on or after a date to be specified in the "Notice of Proceed" by CDA and to fully complete the project(s) as specified in the Notice of Proceed.

Respectfully Submitted:

By: _____
(Authorized Signature)

(Typed or Printed Name and Title)

Company Name: _____

Address: _____

Federal ID#: _____

Phone: _____

Contact Person: _____

Email Address: _____

Exhibit 2

AIA Document AIA A305-2020 Contractor Qualifications Statement

The following is an example of AIA Document A305 – 2020. Complete a copy of this form and include it with your Bid.

DRAFT AIA® Document A305® – 2020

Contractor's Qualification Statement

THE PARTIES SHOULD EXECUTE A SEPARATE CONFIDENTIALITY AGREEMENT IF THEY INTEND FOR ANY OF THE INFORMATION IN THIS A305-2020 TO BE HELD CONFIDENTIAL.

SUBMITTED BY:

(Organization name and address.)

« »

SUBMITTED TO:

(Organization name and address.)

« »

TYPE OF WORK TYPICALLY PERFORMED

(Indicate the type of work your organization typically performs, such as general contracting, construction manager as constructor services, HVAC contracting, electrical contracting, plumbing contracting, or other.)

« »

THIS CONTRACTOR'S QUALIFICATION STATEMENT INCLUDES THE FOLLOWING:

(Check all that apply.)

- [« »] Exhibit A – General Information
- [« »] Exhibit B – Financial and Performance Information
- [« »] Exhibit C – Project-Specific Information
- [« »] Exhibit D – Past Project Experience
- [« »] Exhibit E – Past Project Experience (Continued)

CONTRACTOR CERTIFICATION

The undersigned certifies under oath that the information provided in this Contractor's Qualification Statement is true and sufficiently complete so as not to be misleading.

Organization's Authorized Representative
Signature

« »

Date

« »

Printed Name and Title

NOTARY

State of: « »

County of: « »

Signed and sworn to before me this « » day of « » « »

Notary Signature

My commission expires: « »

ADDITIONS AND DELETIONS:

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

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

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EXHIBIT 3**INSURANCE REQUIREMENTS**

1. **Builder's Risk Insurance:** Contractor shall provide builder's risk "all-risks" completed value or equivalent policy form sufficient to cover the total value of the entire Project on a replacement cost basis. The insurance coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent Modifications and labor performed and materials or equipment supplied by others. The builder's risk insurance shall be maintained until Substantial Completion

2. **Workers' Compensation and Employers' Liability** meeting statutory limits mandated by state and federal laws. If (1) limits in excess of those required by statute are to be provided, or (2) the employer is not statutorily bound to obtain such insurance coverage or (3) additional coverages are required, additional coverages and limits for such insurance shall be as follows:

500,000	Employer's Liability
---------	----------------------

3. **Commercial General Liability**

1,000,000	Each Occurrence
2,000,000	General Aggregate
1,000,000	Personal and Advertising Injury
2,000,000	Products-Completed Operations Aggregate

 - a. The policy shall be endorsed to have General Aggregate apply to this Project only.
 - b. Products and Completed Operations insurance shall be maintained for a minimum period of at least two (2) year(s) after either 90 days following Substantial Completion or final payment, whichever is earlier.
 - c. The Contractual Liability insurance shall include coverage sufficient to meet the Contractor's indemnity obligations under this Contract.

4. **Automobile Liability** (owned, non-owned and hired vehicles) for bodily injury and property damage:

1,000,000	Each Accident
-----------	---------------

5. **Professional Liability Insurance.** If Contractor or its subcontractor will provide profession services under this Contract, the party providing the service shall maintain professional liability insurance in the minimum amount of \$1,000,000 combined single limit (CSL).

6. **Excess Umbrella Liability Policy.** Contractor may meet the insurance requirements of this Contract with an umbrella insurance policy that provides equivalent or better coverage.

The following words must be on the certificate of insurance: "Thirty (30) days' advance written notice of changes or cancellation of coverage will be given to the certificate holder." Any additional words such as "will endeavor to" or "failure to do so will impose no obligation," must be crossed off the certificate.

Exhibit 4

Non-Collusion Affidavits

1. Proposers shall provide the following with their proposals:
 - a. Non-Collusive/Non-Identity of Interest Affidavit.
 - b. State of Minnesota Affidavit of Non-Collusion

APPENDIX 39

NON-COLLUSIVE/NON-IDENTITY OF INTEREST AFFIDAVIT

(To be modified if law requires other Form)

A F F I D A V I T

(Prime Bidder)

State of _____) ss.

County of _____)

_____ ,
being first duly sworn, deposes and says:

(1) That undersigned is _____ (a partner or officer of the firm of, _____ etc.,) _____ the party making the foregoing proposal or bid; (2) that such proposal or bid is genuine and not collusive or sham; that said Bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any Bidder or person, to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price of affiant or of any other bidder, or fix any overhead, profit or cost element of said bid price, or of that of any other bidder, or to secure any advantage against the _____ (Owner) _____ or any person interested in the proposed contract; and (3) that no identity of interest exists or will between Bidder and the Owner or Architect.

WARNING: U.S. Criminal Code, Section 1001, Title 18 U.S.C. provides as follows: Whoever, in any matter within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals or covers up by any trick, scheme or device a material fact, or makes or uses any false writing or document knowing the same to contain any false, fictitious or fraudulent statement of entry, shall be fined not more than \$10,000 or imprisoned not more than five years, or both.

An identity of interest will be construed to exist:

- (a) If there is any financial interest of the owner in the general contractor;
- (b) If any of the officers or directors of the owner is also an officer, director, or stockholder of the general contractor;
- (c) If any officer or director of the owner has any financial interest whatsoever in the general contractor;

- (d) If the general contractor advances any funds to the owner; including providing a land option or any of the costs of obtaining a land option;
- (e) If the general contractor provides and pays, on behalf of the owner, the cost of any architectural or engineering service other than those of a surveyor, general superintendent, or engineer employed by a general contractor in connection with his/her obligations under the construction contract;
- (f) If the general contractor has any interest in the owner corporation as part of the consideration for payment;
- (g) When there exists (or come into being) any side deals, agreements, contracts or undertaking entered into or contemplated, thereby altering, amending, or cancelling any of the required closing documents.
- (h) When the contractor or any officer, director, stockholder, or partner of such contractor has any financial interest whatsoever in the architectural firm;
- (i) When the architect has stock or any financial interest in the contractor.
- (j) When the contractor or any officer, director, stockholder or partner of such contract provides any of the required architectural services; or where the contractor, or any officer, director, stockholder or partner of such providing an architectural services, acts as a consultant to the project architect.
- (k) When there exists (or comes into being) any side deals, agreements, contracts or undertaking, thereby altering, amending, or cancelling any of the required closing documents.

Signature of:

Bidder, if the Bidder is an individual;

By _____ Partner, if the Bidder is a partnership;

Title _____ Officer, if the Bidder is a corporation.

Subscribed and sworn to before me
this _____ day of _____, 19____.

My commission expires _____, 19____.

APPENDIX III

STATE OF MINNESOTA AFFIDAVIT OF NON-COLLUSION (Must be submitted with Response)

I swear (or affirm) under the penalty of perjury:

1. That I am the Proposer (if the Proposer is an individual), a partner in the company (if the Proposer is a partnership), or an officer or employee of the responding corporation having authority to sign on its behalf (if the Proposer is a corporation);
2. That the attached proposal submitted in response to the _____ Request for Proposals has been arrived at by the Proposer independently and has been submitted without collusion with and without any agreement, understanding or planned common course of action with, any other Proposer of materials, supplies, equipment or services described in the Request for Proposal, designed to limit fair and open competition;
3. That the contents of the proposal have not been communicated by the Proposer or its employees or agents to any person not an employee or agent (including a partner) of the Proposer and will not be communicated to any such persons prior to the official opening of the proposals; and
4. That I am fully informed regarding the accuracy of the statements made in this affidavit.

Proposer's Firm Name: _____

Authorized Signature: _____

Date: _____

SECTION 00 4530
RESPONSIBLE CONTRACTOR VERIFICATION AND CERTIFICATION OF COMPLIANCE
PART 1 GENERAL

1.01 RESPONSIBLE CONTRACTOR VERIFICATION AND CERTIFICATION OF COMPLIANCE

- A. The Responsible Contractor Verification and Certification of Compliance Forms are attached following this page.
 - 1. Attachment A - Responsible Contractor and Certification of Compliance.
 - 2. Attachment A-1 - First-Tier Subcontractor List.
 - 3. Attachment A-2 - Additional Subcontractor List.

END OF SECTION

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**ATTACHMENT A
PRIME CONTRACTOR RESPONSE**

RESPONSIBLE CONTRACTOR VERIFICATION AND CERTIFICATION OF COMPLIANCE

PROJECT TITLE: _____

This form includes changes by statutory references from the Laws of Minnesota 2015, chapter 64, sections 1-9.
This form **must** be submitted with the response to this solicitation. **A response received without this form, will be rejected.**

Minn. Stat. § 16C.285, Subd. 7. **IMPLEMENTATION.** ... any prime contractor or subcontractor or motor carrier that does not meet the minimum criteria in subdivision 3 or fails to verify that it meets those criteria is not a responsible contractor and is not eligible to be awarded a construction contract for the project or to perform work on the project...

Minn. Stat. § 16C.285, Subd. 3. **RESPONSIBLE CONTRACTOR, MINIMUM CRITERIA.** "Responsible contractor" means a contractor that conforms to the responsibility requirements in the solicitation document for its portion of the work on the project and verifies that it meets the following minimum criteria:

- | | |
|-----|--|
| (1) | <p>The Contractor:</p> <ul style="list-style-type: none">(i) is in compliance with workers' compensation and unemployment insurance requirements;(ii) is in compliance with Department of Revenue and Department of Employment and Economic Development registration requirements if it has employees;(iii) has a valid federal tax identification number or a valid Social Security number if an individual; and(iv) has filed a certificate of authority to transact business in Minnesota with the Secretary of State if a foreign corporation or cooperative. |
| (2) | <p>The contractor or related entity is in compliance with and, during the three-year period before submitting the verification, has not violated section 177.24, 177.25, 177.41 to 177.44, 181.13, 181.14, or 181.722, and has not violated United States Code, title 29, sections 201 to 219, or United States Code, title 40, sections 3141 to 3148. For purposes of this clause, a violation occurs when a contractor or related entity:</p> <ul style="list-style-type: none">(i) repeatedly fails to pay statutorily required wages or penalties on one or more separate projects for a total underpayment of \$25,000 or more within the three-year period, provided that a failure to pay is "repeated" only if it involves two or more separate and distinct occurrences of underpayment during the three-year period;(ii) has been issued an order to comply by the commissioner of Labor and Industry that has become final;(iii) has been issued at least two determination letters within the three-year period by the Department of Transportation finding an underpayment by the contractor or related entity to its own employees;(iv) has been found by the commissioner of Labor and Industry to have repeatedly or willfully violated any of the sections referenced in this clause pursuant to section 177.27;(v) has been issued a ruling or findings of underpayment by the administrator of the Wage and Hour Division of the United States Department of Labor that have become final or have been upheld by an administrative law judge or the Administrative Review Board; or(vi) has been found liable for underpayment of wages or penalties or misrepresenting a construction worker as an independent contractor in an action brought in a court having jurisdiction. Provided that, if the contractor or related entity contests a determination of underpayment by the Department of Transportation in a contested case proceeding, a violation does not occur until the contested case proceeding has concluded with a determination that the contractor or related entity underpaid wages or penalties;* |

(3)	The contractor or related entity is in compliance with and, during the three-year period before submitting the verification, has not violated section 181.723 or chapter 326B. For purposes of this clause, a violation occurs when a contractor or related entity has been issued a final administrative or licensing order;*
(4)	The contractor or related entity has not, more than twice during the three-year period before submitting the verification, had a certificate of compliance under section 363A.36 revoked or suspended based on the provisions of section 363A.36, with the revocation or suspension becoming final because it was upheld by the Office of Administrative Hearings or was not appealed to the office;*
(5)	The contractor or related entity has not received a final determination assessing a monetary sanction from the Department of Administration or Transportation for failure to meet targeted group business, disadvantaged business enterprise, or veteran-owned business goals, due to a lack of good faith effort, more than once during the three-year period before submitting the verification;*
	* Any violations, suspensions, revocations, or sanctions, as defined in clauses (2) to (5), occurring prior to July 1, 2014, shall not be considered in determining whether a contractor or related entity meets the minimum criteria.
(6)	The contractor or related entity is not currently suspended or debarred by the federal government or the state of Minnesota or any of its departments, commissions, agencies, or political subdivisions that have authority to debar a contractor; and
(7)	All subcontractors and motor carriers that the contractor intends to use to perform project work have verified to the contractor through a signed statement under oath by an owner or officer that they meet the minimum criteria listed in clauses (1) to (6).

Minn. Stat. § 16C.285, Subd. 5. **SUBCONTRACTOR VERIFICATION.**

A prime contractor or subcontractor shall include in its verification of compliance under subdivision 4 a list of all of its first-tier subcontractors that it intends to retain for work on the project. Prior to execution of a construction contract, and as a condition precedent to the execution of a construction contract, the apparent successful prime contractor shall submit to the contracting authority a supplemental verification under oath confirming compliance with subdivision 3, clause (7). Each contractor or subcontractor shall obtain from all subcontractors with which it will have a direct contractual relationship a signed statement under oath by an owner or officer verifying that they meet all of the minimum criteria in subdivision 3 prior to execution of a construction contract with each subcontractor.

If a prime contractor or any subcontractor retains additional subcontractors on the project after submitting its verification of compliance, the prime contractor or subcontractor shall obtain verifications of compliance from each additional subcontractor with which it has a direct contractual relationship and shall submit a supplemental verification confirming compliance with subdivision 3, clause (7), within 14 days of retaining the additional subcontractors.

A prime contractor shall submit to the contracting authority upon request copies of the signed verifications of compliance from all subcontractors of any tier pursuant to subdivision 3, clause (7). A prime contractor and subcontractors shall not be responsible for the false statements of any subcontractor with which they do not have a direct contractual relationship. A prime contractor and subcontractors shall be responsible for false statements by their first-tier subcontractors with which they have a direct contractual relationship only if they accept the verification of compliance with actual knowledge that it contains a false statement.

Subd. 5a. Motor carrier verification. A prime contractor or subcontractor shall obtain annually from all motor carriers with which it will have a direct contractual relationship a signed statement under oath by an owner or officer verifying that they meet all of the minimum criteria in subdivision 3 prior to execution of a construction contract with each motor carrier. A prime contractor or subcontractor shall require each such motor carrier to provide it with immediate written notification in the event that the motor carrier no longer meets one or more of the minimum criteria in subdivision 3 after submitting its annual verification. A motor carrier shall be ineligible to perform work on a project covered by this section if it does not meet all the minimum criteria in subdivision 3. Upon request, a prime contractor or subcontractor shall submit to the contracting authority the signed verifications of compliance from all motor carriers providing for-hire transportation of materials, equipment, or supplies for a project.

Minn. Stat. § 16C.285, Subd. 4. **VERIFICATION OF COMPLIANCE.**

A contractor responding to a solicitation document of a contracting authority shall submit to the contracting authority a signed statement under oath by an owner or officer verifying compliance with each of the minimum criteria in subdivision 3, with the exception of clause (7), at the time that it responds to the solicitation document.

A contracting authority may accept a signed statement under oath as sufficient to demonstrate that a contractor is a responsible contractor and shall not be held liable for awarding a contract in reasonable reliance on that statement. A prime contractor, subcontractor, or motor carrier that fails to verify compliance with any one of the required minimum criteria or makes a false statement under oath in a verification of compliance shall be ineligible to be awarded a construction contract on the project for which the verification was submitted.

A false statement under oath verifying compliance with any of the minimum criteria may result in termination of a construction contract that has already been awarded to a prime contractor or subcontractor or motor carrier that submits a false statement. A contracting authority shall not be liable for declining to award a contract or terminating a contract based on a reasonable determination that the contractor failed to verify compliance with the minimum criteria or falsely stated that it meets the minimum criteria. A verification of compliance need not be notarized. An electronic verification of compliance made and submitted as part of an electronic bid shall be an acceptable verification of compliance under this section provided that it contains an electronic signature as defined in section 325L.02, paragraph (h).

CERTIFICATION

By signing this document I certify that I am an owner or officer of the company, and I swear under oath that:

- 1) My company meets each of the Minimum Criteria to be a responsible contractor as defined herein and is in compliance with Minn. Stat. § 16C.285,**
- 2) If my company is awarded a contract, I will submit Attachment A-1 prior to contract execution, and**
- 3) if my company is awarded a contract, I will also submit Attachment A-2 as required.**

Authorized Signature of Owner or Officer:

Printed Name:

Title:

Date:

Company Name:

NOTE: Minn. Stat. § 16C.285, Subd. 2, (c) If only one prime contractor responds to a solicitation document, a contracting authority may award a construction contract to the responding prime contractor even if the minimum criteria in subdivision 3 are not met.

**ATTACHMENT A-1
FIRST-TIER SUBCONTRACTORS LIST**

SUBMIT PRIOR TO EXECUTION OF A CONSTRUCTION CONTRACT

PROJECT TITLE: _____

Minn. Stat. § 16C.285, Subd. 5. A prime contractor or subcontractor shall include in its verification of compliance under subdivision 4 a list of all of its first-tier subcontractors that it intends to retain for work on the project. Prior to execution of a construction contract, and as a condition precedent to the execution of a construction contract, the apparent successful prime contractor shall submit to the contracting authority a supplemental verification under oath confirming compliance with subdivision 3, clause (7). Each contractor or subcontractor shall obtain from all subcontractors with which it will have a direct contractual relationship a signed statement under oath by an owner or officer verifying that they meet all of the minimum criteria in subdivision 3 prior to execution of a construction contract with each subcontractor.

FIRST TIER SUBCONTRACTOR NAMES* (Legal name of company as registered with the Secretary of State)	Name of city where company home office is located

*Attach additional sheets as needed for submission of all first-tier subcontractors.

SUPPLEMENTAL CERTIFICATION FOR ATTACHMENT A-1	
By signing this document I certify that I am an owner or officer of the company, and I swear under oath that: All first-tier subcontractors listed on attachment A-1 have verified through a signed statement under oath by an owner or officer that they meet the minimum criteria to be a responsible contractor as defined in Minn. Stat. § 16C.285 .	
Authorized Signature of Owner or Officer:	Printed Name:
Title:	Date:
Company Name:	

ATTACHMENT A-2

ADDITIONAL SUBCONTRACTORS LIST

PRIME CONTRACTOR TO SUBMIT AS SUBCONTRACTORS ARE ADDED TO THE PROJECT

PROJECT TITLE: _____

This form must be submitted to the Project Manager or individual as identified in the solicitation document.

Minn. Stat. § 16C.285, Subd. 5. ... If a prime contractor or any subcontractor retains additional subcontractors on the project after submitting its verification of compliance, the prime contractor or subcontractor shall obtain verifications of compliance from each additional subcontractor with which it has a direct contractual relationship and shall submit a supplemental verification confirming compliance with subdivision 3, clause (7), within 14 days of retaining the additional subcontractors. ...

ADDITIONAL SUBCONTRACTOR NAMES (Legal name of company as registered with the Secretary of State)	Name of city where company home office is located

*Attach additional sheets as needed for submission of all additional subcontractors.

SUPPLEMENTAL CERTIFICATION FOR ATTACHMENT A-2	
By signing this document I certify that I am an owner or officer of the company, and I swear under oath that:	
All additional subcontractors listed on Attachment A-2 have verified through a signed statement under oath by an owner or officer that they meet the minimum criteria to be a responsible contractor as defined in Minn. Stat. § 16C.285.	
Authorized Signature of Owner or Officer:	Printed Name:
Title:	Date:
Company Name:	

**SECTION 00 5000
CONTRACTING FORMS AND SUPPLEMENTS**

PART 1 GENERAL

1.01 AGREEMENT AND CONDITIONS OF THE CONTRACT

- A. The Agreement and General Conditions are based on AIA A104, as modified by the Owner.

1.02 FORMS

- A. Use the following forms for the specified purposes unless otherwise indicated elsewhere in Contract Documents.
- B. Bond Forms: Prior to execution of the agreement form for the project, the Owner shall require that the General Contractor provide the following Bond Forms:
 - 1. Performance and Payment Bond Form: AIA A312.
- C. Post-Award Certificates and Other Forms:
 - 1. Schedule of Values Form: AIA G703.
 - 2. Application for Payment Forms: AIA G702 with AIA G703 (for Contractors).
- D. Clarification and Modification Forms:
 - 1. Architect's Supplemental Instructions Form: Architect's standard form.
 - 2. Construction Change Directive Form: AIA G714.
 - 3. Proposal Request Form: Architect's standard form.
 - 4. Change Order Request Form: Form provided by Contractor and approved by the Owner.
 - 5. Change Order Form: AIA G701.
- E. Closeout Forms:
 - 1. Certificate of Substantial Completion Form: AIA G704.

1.03 REFERENCE STANDARDS

- A. AIA A104 - Standard Abbreviated Form of Agreement Between Owner and Contractor; 2017.
- B. AIA A312 - Performance Bond and Payment Bond; 2010.
- C. AIA G701 - Change Order; 2017.
- D. AIA G702 - Application and Certificate for Payment; 1992.
- E. AIA G703 - Continuation Sheet; 1992.
- F. AIA G704 - Certificate of Substantial Completion; 2017.
- G. AIA G714 - Construction Change Directive; 2017.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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AIA® Document A104® – 2017

Standard Abbreviated Form of Agreement Between Owner and Contractor

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

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

Carver County CDA
705 North Walnut Street
Chaska, Minnesota 55318

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

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

Franklin Avenue House
413 Franklin Avenue Northwest
Watertown, Minnesota 55388

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

LHB, Inc.
-
701 Washington Avenue North, Suite 200
Minneapolis, Minnesota 55401

The Owner and Contractor agree as follows.

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

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TABLE OF ARTICLES

- 1 THE WORK OF THIS CONTRACT
- 2 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
- 3 CONTRACT SUM
- 4 PAYMENT
- 5 DISPUTE RESOLUTION
- 6 ENUMERATION OF CONTRACT DOCUMENTS
- 7 GENERAL PROVISIONS
- 8 OWNER
- 9 CONTRACTOR
- 10 ARCHITECT
- 11 SUBCONTRACTORS
- 12 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
- 13 CHANGES IN THE WORK
- 14 TIME
- 15 PAYMENTS AND COMPLETION
- 16 PROTECTION OF PERSONS AND PROPERTY
- 17 INSURANCE AND BONDS
- 18 CORRECTION OF WORK
- 19 MISCELLANEOUS PROVISIONS
- 20 TERMINATION OF THE CONTRACT
- 21 CLAIMS AND DISPUTES

EXHIBIT A DETERMINATION OF THE COST OF THE WORK

ARTICLE 1 THE WORK OF THIS CONTRACT

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

ARTICLE 2 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

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

(Check one of the following boxes.)

☐ The date of this Agreement.

☐ A date set forth in a notice to proceed issued by the Owner.

☐ Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

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

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

§ 2.3 Substantial Completion

§ 2.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:
(Check the appropriate box and complete the necessary information.)

☐ Not later than () calendar days from the date of commencement of the Work.

☐ By the following date:

§ 2.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work

Substantial Completion Date

§ 2.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 2.3, liquidated damages, if any, shall be assessed as set forth in Section 3.5.

ARTICLE 3 CONTRACT SUM

§ 3.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be one of the following:
(Check the appropriate box.)

☒ Stipulated Sum, in accordance with Section 3.2 below

☐ Cost of the Work plus the Contractor's Fee, in accordance with Section 3.3 below

☐ Cost of the Work plus the Contractor's Fee with a Guaranteed Maximum Price, in accordance with Section 3.4 below

(Based on the selection above, complete Section 3.2, 3.3 or 3.4 below.)

§ 3.2 The Stipulated Sum shall be (\$), subject to additions and deductions as provided in the Contract Documents.

§ 3.2.1 The Stipulated Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:

(State the numbers or other identification of accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

§ 3.2.2 Unit prices, if any:

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

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

§ 3.2.3 Allowances, if any, included in the stipulated sum:
(Identify each allowance.)

Item	Price

§ 3.3 Cost of the Work Plus Contractor's Fee

§ 3.3.1 The Cost of the Work is as defined in Exhibit A, Determination of the Cost of the Work.

§ 3.3.2 The Contractor's Fee:

(State a lump sum, percentage of Cost of the Work or other provision for determining the Contractor's Fee and the method of adjustment to the Fee for changes in the Work.)

§ 3.4 Cost of the Work Plus Contractor's Fee With a Guaranteed Maximum Price

§ 3.4.1 The Cost of the Work is as defined in Exhibit A, Determination of the Cost of the Work.

§ 3.4.2 The Contractor's Fee:

(State a lump sum, percentage of Cost of the Work or other provision for determining the Contractor's Fee and the method of adjustment to the Fee for changes in the Work.)

§ 3.4.3 Guaranteed Maximum Price

§ 3.4.3.1 The sum of the Cost of the Work and the Contractor's Fee is guaranteed by the Contractor not to exceed (\$), subject to additions and deductions by changes in the Work as provided in the Contract Documents. This maximum sum is referred to in the Contract Documents as the Guaranteed Maximum Price. Costs which would cause the Guaranteed Maximum Price to be exceeded shall be paid by the Contractor without reimbursement by the Owner.

(Insert specific provisions if the Contractor is to participate in any savings.)

§ 3.4.3.2 The Guaranteed Maximum Price is based on the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:

(State the numbers or other identification of accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

§ 3.4.3.3 Unit Prices, if any:

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

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

§ 3.4.3.4 Allowances, if any, included in the Guaranteed Maximum Price:

(Identify each allowance.)

Item	Price

§ 3.4.3.5 Assumptions, if any, on which the Guaranteed Maximum Price is based:

§ 3.4.3.6 To the extent that the Contract Documents are anticipated to require further development, the Guaranteed Maximum Price includes the costs attributable to such further development consistent with the Contract Documents and reasonably inferable therefrom. Such further development does not include changes in scope, systems, kinds and quality of materials, finishes or equipment, all of which, if required, shall be incorporated by Change Order.

§ 3.4.3.7 The Owner shall authorize preparation of revisions to the Contract Documents that incorporate the agreed-upon assumptions contained in Section 3.4.3.5. The Owner shall promptly furnish such revised Contract Documents to the Contractor. The Contractor shall notify the Owner and Architect of any inconsistencies between the agreed-upon assumptions contained in Section 3.4.3.5 and the revised Contract Documents.

§ 3.5 Liquidated damages, if any:

(Insert terms and conditions for liquidated damages, if any.)

\$150 per calendar day for each day that the work remains incomplete after the contract completion date until such time as Substantial Completion of the contract is achieved.

ARTICLE 4 PAYMENT

§ 4.1 Progress Payments

§ 4.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 4.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

§ 4.1.3 Provided that an Application for Payment is received by the Architect not later than the day of a month, the Owner shall make payment of the certified amount to the Contractor not later than the day of the month. If an Application for Payment is received by the Architect after the date fixed above, payment shall be made by the Owner not later than (14) days after the Architect receives the Application for Payment.
(Federal, state or local laws may require payment within a certain period of time.)

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

(Insert a percentage or amount to be withheld as retainage from each Application for Payment and any terms for reduction of retainage during the course of the Work. The amount of retainage may be limited by governing law.)

§ 4.1.5 Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

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

%

§ 4.2 Final Payment

§ 4.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Section 18.2, and to satisfy other requirements, if any, which extend beyond final payment;
- .2 the Contractor has submitted a final accounting for the Cost of the Work, where payment is on the basis of the Cost of the Work with or without a Guaranteed Maximum Price; and
- .3 a final Certificate for Payment has been issued by the Architect in accordance with Section 15.7.1.

§ 4.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

ARTICLE 5 DISPUTE RESOLUTION

§ 5.1 Binding Dispute Resolution

For any claim subject to, but not resolved by, mediation pursuant to Section 21.5, the method of binding dispute resolution shall be as follows:

(Check the appropriate box.)

☐ Arbitration pursuant to Section 21.6 of this Agreement

☒ Litigation in a court of competent jurisdiction

☐ Other *(Specify)*

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

ARTICLE 6 ENUMERATION OF CONTRACT DOCUMENTS

§ 6.1 The Contract Documents are defined in Article 7 and, except for Modifications issued after execution of this Agreement, are enumerated in the sections below.

§ 6.1.1 The Agreement is this executed AIA Document A104™–2017, Standard Abbreviated Form of Agreement Between Owner and Contractor.

§ 6.1.2 ~~Building information modeling exhibit, AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:~~

(Insert the date of the ~~building information modeling exhibit E203–2013~~ incorporated into this Agreement.)

§ 6.1.3 The Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

§ 6.1.4 The Specifications:

(Either list the Specifications here or refer to an exhibit attached to this Agreement.)

Section	Title	Date	Pages

§ 6.1.5 The Drawings:

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User Notes:

(3B9ADA31)

(Either list the Drawings here or refer to an exhibit attached to this Agreement.)

Number	Title	Date

§ 6.1.6 The Addenda, if any:

Number	Date	Pages

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are enumerated in this Article 6.

§ 6.1.7 Additional documents, if any, forming part of the Contract Documents:

- .1** Other Exhibits:
(Check all boxes that apply.)

☐ Exhibit A, Determination of the Cost of the Work.

☐ AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017 incorporated into this Agreement.)

☐ The Sustainability Plan:

Title	Date	Pages

☐ Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

- .2** Other documents, if any, listed below:
(List here any additional documents that are intended to form part of the Contract Documents.)

ARTICLE 7 GENERAL PROVISIONS

§ 7.1 The Contract Documents

The Contract Documents are enumerated in Article 6 and consist of this Agreement (including, if applicable, Supplementary and other Conditions of the Contract), Drawings, Specifications, Addenda issued prior to the execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 7.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall

not be construed to create a contractual relationship of any kind between any persons or entities other than the Owner and the Contractor.

§ 7.3 The Work

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

§ 7.4 Instruments of Service

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

§ 7.5 Ownership and use of Drawings, Specifications and Other Instruments of Service

§ 7.5.1 The Architect and the Architect’s consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and will retain all common law, statutory and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect’s or Architect’s consultants’ reserved rights.

§ 7.5.2 The Contractor, Subcontractors, Sub-subcontractors and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to the protocols established pursuant to Sections 7.6 and 7.7, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect’s consultants.

§ 7.6 Digital Data Use and Transmission

The parties shall agree upon ~~written~~ protocols governing the transmission and use of, and reliance on, of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 7.7 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to ~~written~~ protocols governing the use of, and reliance on, the information contained in the model and ~~without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form,~~ shall be at the using or relying party’s sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

§ 7.8 Severability

The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties’ intentions and purposes in executing the Contract.

§ 7.9 Notice

§ 7.9.1 Except as otherwise provided in Section 7.9.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission in accordance with ~~a building information modeling exhibit, AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit,~~ if completed, or as otherwise set forth below:

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

§ 7.9.2 Notice of Claims shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 7.10 Relationship of the Parties

Where the Contract is based on the Cost of the Work plus the Contractor's Fee, with or without a Guaranteed Maximum Price, the Contractor accepts the relationship of trust and confidence established by this Agreement and covenants with the Owner to cooperate with the Architect and exercise the Contractor's skill and judgment in furthering the interests of the Owner; to furnish efficient business administration and supervision; to furnish at all times an adequate supply of workers and materials; and to perform the Work in an expeditious and economical manner consistent with the Owner's interests. The Owner agrees to furnish and approve, in a timely manner, information required by the Contractor and to make payments to the Contractor in accordance with the requirements of the Contract Documents.

ARTICLE 8 OWNER

§ 8.1 Information and Services Required of the Owner

§ 8.1.1 Prior to commencement of the Work, at the written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 8.1.1, the Contract Time shall be extended appropriately.

§ 8.1.2 The Owner shall furnish all necessary surveys and a legal description of the site.

§ 8.1.3 The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 8.1.4 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 9.6.1, the Owner shall secure and pay for other necessary approvals, easements, assessments, and charges required for the construction, use, or occupancy of permanent structures or for permanent changes in existing facilities.

§ 8.1.5 The Owner will review and approve or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 8.2 Owner's Right to Stop the Work

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

§ 8.3 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents, and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to any other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 15.4.3, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including the Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If the Contractor disagrees with

the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 21.

ARTICLE 9 CONTRACTOR

§ 9.1 Review of Contract Documents and Field Conditions by Contractor

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

§ 9.1.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 8.1.2, shall take field measurements of any existing conditions related to that portion of the Work and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies, or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional unless otherwise specifically provided in the Contract Documents.

§ 9.1.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 9.2 Supervision and Construction Procedures

§ 9.2.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters.

§ 9.2.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for or on behalf of the Contractor or any of its Subcontractors.

§ 9.3 Labor and Materials

§ 9.3.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

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

§ 9.3.3 The Contractor may make a substitution only with the consent of the Owner, after evaluation by the Architect and in accordance with a Modification.

§ 9.4 Warranty

The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation or normal wear and tear under normal usage. All other warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 15.6.3.

§ 9.5 Taxes

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

§ 9.6 Permits, Fees, Notices, and Compliance with Laws

§ 9.6.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

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

§ 9.7 Allowances

The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. The Owner shall select materials and equipment under allowances with reasonable promptness. Allowance amounts shall include the costs to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts. Contractor's costs for unloading and handling at the site, labor, installation, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowance.

§ 9.8 Contractor's Construction Schedules

§ 9.8.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 9.8.2 The Contractor shall perform the Work in general accordance with the most recent schedule submitted to the Owner and Architect.

§ 9.9 Submittals

§ 9.9.1 The Contractor shall review for compliance with the Contract Documents and submit to the Architect ~~Owner~~ Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents in coordination with the Contractor's construction schedule and in such sequence as to allow the Architect ~~Owner~~ reasonable time for review. By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them; (2) determined and verified materials, field measurements, and field construction criteria related thereto, or will do so; and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents. The Work shall be in accordance with approved submittals.

§ 9.9.2 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents.

§ 9.9.3 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents or unless the Contractor needs to provide such services in order to carry out the Contractor's own responsibilities. If professional design services or certifications by a design professional are specifically required, the Owner and the Architect will specify the performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional. If no criteria are specified, the design shall comply with applicable codes and ordinances. Each Party shall be entitled to rely upon the information provided by the other Party. The Architect will review and approve or take other appropriate action on submittals for the limited purpose of checking for conformance with information provided and the design concept expressed in the Contract Documents. The Architect's ~~Owner's~~ review of Shop Drawings, Product Data, Samples, and similar submittals shall be for the limited purpose of checking for conformance with information given and the design

concept expressed in the Contract Documents. In performing such review, the ~~Architect~~ Owner will approve, or take other appropriate action upon, the Contractor's Shop Drawings, Product Data, Samples, and similar submittals.

§ 9.10 Use of Site

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

§ 9.11 Cutting and Patching

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

§ 9.12 Cleaning Up

The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus material from and about the Project.

§ 9.13 Access to Work

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

§ 9.14 Royalties, Patents and Copyrights

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

§ 9.15 Indemnification

§ 9.15.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Section 9.15.1.

§ 9.15.2 In claims against any person or entity indemnified under this Section 9.15 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 9.15.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 10 ARCHITECT

§ 10.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an ~~Owner's representative during construction~~ Documents, until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified in writing in accordance with other provisions of the Contract.

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

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

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

§ 10.5 Based on the Architect's evaluations of the Work and of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 10.6 The Architect has authority to reject Work that does not conform to the Contract Documents and to require inspection or testing of the Work.

§ 10.7 Intentionally omitted. The Architect will review and approve or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 10.8 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect will make initial decisions on all claims, disputes, and other matters in question between the Owner and Contractor but will not be liable for results of any interpretations or decisions rendered in good faith.

§ 10.9 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

ARTICLE 11 SUBCONTRACTORS

§ 11.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site.

§ 11.2 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the Subcontractors or suppliers proposed for each of the principal portions of the Work. The Contractor shall not contract with any Subcontractor or supplier to whom the Owner or Architect has made reasonable written objection within ten days after receipt of the Contractor's list of Subcontractors and suppliers. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 11.3 Contracts between the Contractor and Subcontractors shall (1) require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by the terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by the Contract Documents, assumes toward the Owner and Architect, and (2) allow the Subcontractor the benefit of all rights, remedies and redress against the Contractor that the Contractor, by these Contract Documents, has against the Owner.

ARTICLE 12 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 12.1 The term “Separate Contractor(s)” shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner’s own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 12.2 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor’s activities with theirs as required by the Contract Documents.

§ 12.3 The Owner shall be reimbursed by the Contractor for costs incurred by the Owner which are payable to a Separate Contractor because of delays, improperly timed activities, or defective construction of the Contractor. The Owner shall be responsible to the Contractor for costs incurred by the Contractor because of delays, improperly timed activities, damage to the Work, or defective construction of a Separate Contractor.

ARTICLE 13 CHANGES IN THE WORK

§ 13.1 By appropriate Modification, changes in the Work may be accomplished after execution of the Contract. The Owner, without invalidating the Contract, may order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, with the Contract Sum and Contract Time being adjusted accordingly. Such changes in the Work shall be authorized by written Change Order signed by the Owner, Contractor, and Architect, or by written Construction Change Directive signed by the Owner and Architect. Upon issuance of the Change Order or Construction Change Directive, the Contractor shall proceed promptly with such changes in the Work, unless otherwise provided in the Change Order or Construction Change Directive.

§ 13.2 Adjustments in the Contract Sum and Contract Time resulting from a change in the Work shall be determined by mutual agreement of the parties or, in the case of a Construction Change Directive signed only by the Owner and Architect, by the Contractor’s cost of labor, material, equipment, and reasonable overhead and profit, unless the parties agree on another method for determining the cost or credit. Pending final determination of the total cost of a Construction Change Directive, the Contractor may request payment for Work completed pursuant to the Construction Change Directive. The Architect will make an interim determination of the amount of payment due for purposes of certifying the Contractor’s monthly Application for Payment. When the Owner and Contractor agree on adjustments to the Contract Sum and Contract Time arising from a Construction Change Directive, the Architect will prepare a Change Order.

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

§ 13.4 If concealed or unknown physical conditions are encountered at the site that differ materially from those indicated in the Contract Documents or from those conditions ordinarily found to exist, the Contract Sum and Contract Time shall be equitably adjusted as mutually agreed between the Owner and Contractor; provided that the Contractor provides notice to the Owner and Architect promptly and before conditions are disturbed.

ARTICLE 14 TIME

§ 14.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing this Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 14.2 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 14.3 The term “day” as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 14.4 The date of Substantial Completion is the date certified by the Architect in accordance with Section 15.6.3.

§ 14.5 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) changes ordered in the Work; (2) by labor disputes, fire, unusual delay in deliveries, abnormal adverse weather conditions not reasonably anticipatable, unavoidable casualties, or any causes beyond the Contractor's control; or (3) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine, subject to the provisions of Article 21.

ARTICLE 15 PAYMENTS AND COMPLETION

§ 15.1 Schedule of Values

§ 15.1.1 Where the Contract is based on a Stipulated Sum or the Cost of the Work with a Guaranteed Maximum Price pursuant to Section 3.2 or 3.4, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Stipulated Sum or Guaranteed Maximum Price to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy required by the Architect. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 15.1.2 The allocation of the Stipulated Sum or Guaranteed Maximum Price under this Section 15.1 shall not constitute a separate stipulated sum or guaranteed maximum price for each individual line item in the schedule of values.

§ 15.2 Control Estimate

§ 15.2.1 Where the Contract Sum is the Cost of the Work, plus the Contractor's Fee without a Guaranteed Maximum Price pursuant to Section 3.3, the Contractor shall prepare and submit to the Owner a Control Estimate within 14 days of executing this Agreement. The Control Estimate shall include the estimated Cost of the Work plus the Contractor's Fee.

§ 15.2.2 The Control Estimate shall include:

- .1 the documents enumerated in Article 6, including all Modifications thereto;
- .2 a list of the assumptions made by the Contractor in the preparation of the Control Estimate to supplement the information provided by the Owner and contained in the Contract Documents;
- .3 a statement of the estimated Cost of the Work organized by trade categories or systems and the Contractor's Fee;
- .4 a project schedule upon which the Control Estimate is based, indicating proposed Subcontractors, activity sequences and durations, milestone dates for receipt and approval of pertinent information, schedule of shop drawings and samples, procurement and delivery of materials or equipment the Owner's occupancy requirements, and the date of Substantial Completion; and
- .5 a list of any contingency amounts included in the Control Estimate for further development of design and construction.

§ 15.2.3 When the Control Estimate is acceptable to the Owner and Architect, the Owner shall acknowledge it in writing. The Owner's acceptance of the Control Estimate does not imply that the Control Estimate constitutes a Guaranteed Maximum Price.

§ 15.2.4 The Contractor shall develop and implement a detailed system of cost control that will provide the Owner and Architect with timely information as to the anticipated total Cost of the Work. The cost control system shall compare the Control Estimate with the actual cost for activities in progress and estimates for uncompleted tasks and proposed changes. This information shall be reported to the Owner, in writing, no later than the Contractor's first Application for Payment and shall be revised and submitted with each Application for Payment.

§ 15.2.5 The Owner shall authorize preparation of revisions to the Contract Documents that incorporate the agreed-upon assumptions contained in the Control Estimate. The Owner shall promptly furnish such revised Contract Documents to the Contractor. The Contractor shall notify the Owner and Architect of any inconsistencies between the Control Estimate and the revised Contract Documents.

§ 15.3 Applications for Payment

§ 15.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 15.1, for completed portions of the Work. The application shall be notarized, if required; be supported by all

data substantiating the Contractor's right to payment that the Owner or Architect require; shall reflect retainage if provided for in the Contract Documents; and include any revised cost control information required by Section 15.2.4. Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 15.3.2 With each Application for Payment where the Contract Sum is based upon the Cost of the Work, or the Cost of the Work with a Guaranteed Maximum Price, the Contractor shall submit payrolls, petty cash accounts, receipted invoices or invoices with check vouchers attached, and any other evidence required by the Owner to demonstrate that cash disbursements already made by the Contractor on account of the Cost of the Work equal or exceed progress payments already received by the Contractor plus payrolls for the period covered by the present Application for Payment, less that portion of the progress payments attributable to the Contractor's Fee.

§ 15.3.3 Payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment stored, and protected from damage, off the site at a location agreed upon in writing.

§ 15.3.4 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or other encumbrances adverse to the Owner's interests.

§ 15.4 Certificates for Payment

§ 15.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner of the Architect's reasons for withholding certification in whole or in part as provided in Section 15.4.3.

§ 15.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluations of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 15.4.3 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 15.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 15.4.1. If the Contractor and the Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 9.2.2, because of

- .1 defective Work not remedied;
- .2 third-party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;

- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 15.4.4 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 15.4.3, in whole or in part, that party may submit a Claim in accordance with Article 21.

§ 15.5 Progress Payments

§ 15.5.1 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to sub-subcontractors in a similar manner.

§ 15.5.2 Neither the Owner nor Architect shall have an obligation to pay or see to the payment of money to a Subcontractor or supplier except as may otherwise be required by law.

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

§ 15.5.4 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 15.6 Substantial Completion

§ 15.6.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 15.6.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 15.6.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. When the Architect determines that the Work or designated portion thereof is substantially complete, the Architect will issue a Certificate of Substantial Completion which shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 15.6.4 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 15.7 Final Completion and Final Payment

§ 15.7.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information

and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions stated in Section 15.7.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 15.7.2 Final payment shall not become due until the Contractor has delivered to the Owner a complete release of all liens arising out of this Contract or receipts in full covering all labor, materials and equipment for which a lien could be filed, or a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including costs and reasonable attorneys' fees.

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

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

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

ARTICLE 16 PROTECTION OF PERSONS AND PROPERTY

§ 16.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation, or replacement in the course of construction.

The Contractor shall comply with, and give notices required by, applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities bearing on safety of persons and property and their protection from damage, injury, or loss. The Contractor shall promptly remedy damage and loss to property caused in whole or in part by the Contractor, a Subcontractor, a sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 16.1.2 and 16.1.3. The Contractor may make a claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 9.15.

§ 16.2 Hazardous Materials and Substances

§ 16.2.1 The Contractor is responsible for compliance with the requirements of the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents, and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 16.2.2 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from

performance of the Work in the affected area, if in fact, the material or substance presents the risk of bodily injury or death as described in Section 16.2.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 16.2.3 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.

ARTICLE 17 INSURANCE AND BONDS

§ 17.1 Contractor's Insurance

§ 17.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in this Section 17.1 or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the insurance required by this Agreement from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 18.4, unless a different duration is stated below:

§ 17.1.2 Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than (\$) each occurrence, (\$) general aggregate, and (\$) aggregate for products-completed operations hazard, providing coverage for claims including

- .1 damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person;
- .2 personal and advertising injury;
- .3 damages because of physical damage to or destruction of tangible property, including the loss of use of such property;
- .4 bodily injury or property damage arising out of completed operations; and
- .5 the Contractor's indemnity obligations under Section 9.15.

§ 17.1.3 Automobile Liability covering vehicles owned by the Contractor and non-owned vehicles used by the Contractor, with policy limits of not less than (\$) per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance, and use of those motor vehicles along with any other statutorily required automobile coverage.

§ 17.1.4 The Contractor may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided such primary and excess or umbrella insurance policies result in the same or greater coverage as those required under Section 17.1.2 and 17.1.3, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ 17.1.5 Workers' Compensation at statutory limits.

§ 17.1.6 Employers' Liability with policy limits not less than (\$) each accident, (\$) each employee, and (\$) policy limit.

§ 17.1.7 If the Contractor is required to furnish professional services as part of the Work, the Contractor shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than ~~(\$)~~ per claim and ~~(\$)~~ in the aggregate.

§ 17.1.8 If the Work involves the transport, dissemination, use, or release of pollutants, the Contractor shall procure Pollution Liability insurance, with policy limits of not less than ~~(\$)~~ per claim and ~~(\$)~~ in the aggregate.

§ 17.1.9 Coverage under Sections 17.1.7 and 17.1.8 may be procured through a Combined Professional Liability and Pollution Liability insurance policy, with combined policy limits of not less than **---**(\$ **---**) per claim and **---**(\$ **---**) in the aggregate.

§ 17.1.10 The Contractor shall provide certificates of insurance acceptable to the Owner evidencing compliance with the requirements in this Section 17.1 at the following times: (1) prior to commencement of the Work; (2) upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the period required by Section 17.1.1. The certificates will show the Owner as an additional insured on the Contractor's Commercial General Liability and excess or umbrella liability policy.

§ 17.1.11 The Contractor shall disclose to the Owner any deductible or self-insured retentions applicable to any insurance required to be provided by the Contractor.

§ 17.1.12 To the fullest extent permitted by law, the Contractor shall cause the commercial liability coverage required by this Section 17.1 to include (1) the Owner, the Architect, and the Architect's Consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions for which loss occurs during completed operations. The additional insured coverage shall be primary and non-contributory to any of the Owner's general liability insurance policies and shall apply to both ongoing and completed operations. To the extent commercially available, the additional insured coverage shall be no less than that provided by Insurance Services Office, Inc. (ISO) forms CG 20 10 07 04, CG 20 37 07 04, and, with respect to the Architect and the Architect's Consultants, CG 20 32 07 04.

§ 17.1.13 Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by this Section 17.1, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 17.1.14 Other Insurance Provided by the Contractor

(List below any other insurance coverage to be provided by the Contractor and any applicable limits.)

Coverage	Limits
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§ 17.2 Owner's Insurance

§ 17.2.1 Owner's Liability Insurance

The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

§ 17.2.2 Property Insurance

§ 17.2.2.1 The Owner shall purchase and maintain, from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located, property insurance written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis. The Owner's property insurance coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent Modifications and labor performed or materials or equipment supplied by others. The property insurance shall be maintained until Substantial Completion and thereafter as provided in Section 17.2.2.2, unless otherwise provided in the Contract Documents or otherwise agreed in writing by the parties to this Agreement. This insurance shall include the interests of the Owner, Contractor, Subcontractors, and Sub-subcontractors in the Project as insureds. This insurance shall include the interests of mortgagees as loss payees.

§ 17.2.2.2 Unless the parties agree otherwise, upon Substantial Completion, the Owner shall continue the insurance required by Section 17.2.2.1 or, if necessary, replace the insurance policy required under Section 17.2.2.1 with

property insurance written for the total value of the Project that shall remain in effect until expiration of the period for correction of the Work set forth in Section 18.4.

§ 17.2.2.3 If the insurance required by this Section 17.2.2 is subject to deductibles or self-insured retentions, the Owner shall be responsible for all loss not covered because of such deductibles or retentions.

§ 17.2.2.4 If the Work involves remodeling an existing structure or constructing an addition to an existing structure, the Owner shall purchase and maintain, until the expiration of the period for correction of Work as set forth in Section 18.4, “all-risks” property insurance, on a replacement cost basis, protecting the existing structure against direct physical loss or damage, notwithstanding the undertaking of the Work. The Owner shall be responsible for all co-insurance penalties.

§ 17.2.2.5 Prior to commencement of the Work, the Owner shall secure the insurance, and provide evidence of the coverage, required under this Section 17.2.2 and, upon the Contractor’s request, provide a copy of the property insurance policy or policies required by this Section 17.2.2. The copy of the policy or policies provided shall contain all applicable conditions, definitions, exclusions, and endorsements.

§ 17.2.2.6 Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any insurance required by this Section 17.2.2, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 17.2.2.7 Waiver of Subrogation

§ 17.2.2.7.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect’s consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by this Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect’s consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this Section 17.2.2.7 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 17.2.2.7.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 17.2.2.7.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

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

§ 17.2.3 Other Insurance Provided by the Owner

(List below any other insurance coverage to be provided by the Owner and any applicable limits.)

Coverage	Limits

§ 17.3 Performance Bond and Payment Bond

§ 17.3.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in the Contract Documents on the date of execution of the Contract.

§ 17.3.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

ARTICLE 18 CORRECTION OF WORK

§ 18.1 The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed, or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense, unless compensable under Section A.1.7.3 in Exhibit A, Determination of the Cost of the Work.

§ 18.2 In addition to the Contractor's obligations under Section 9.4, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 15.6.3, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty.

§ 18.3 If the Contractor fails to correct nonconforming Work within a reasonable time, the Owner may correct it in accordance with Section 8.3.

§ 18.4 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 18.5 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Article 18.

ARTICLE 19 MISCELLANEOUS PROVISIONS

§ 19.1 Assignment of Contract

Neither party to the Contract shall assign the Contract without written consent of the other, except that the Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

§ 19.2 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 21.6.

§ 19.3 Tests and Inspections

Tests, inspections, and approvals of portions of the Work required by the Contract Documents or by applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities shall be made at an

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

§ 19.4 The Owner's representative:

(Name, address, email address and other information)



§ 19.5 The Contractor's representative:

(Name, address, email address and other information)



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

ARTICLE 20 TERMINATION OF THE CONTRACT

§ 20.1 Termination by the Contractor

If the Architect fails to certify payment as provided in Section 15.4.1 for a period of 30 days through no fault of the Contractor, or if the Owner fails to make payment as provided in Section 4.1.3 for a period of 30 days, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, costs incurred by reason of such termination, and damages.

§ 20.2 Termination by the Owner for Cause

§ 20.2.1 The Owner may terminate the Contract if the Contractor

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

§ 20.2.2 When any of the reasons described in Section 20.2.1 exists, the Owner, upon certification by the Architect that sufficient cause exists to justify such action, may, without prejudice to any other remedy the Owner may have and after giving the Contractor seven days' notice, terminate the Contract and take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor and may finish the Work by whatever reasonable method the Owner may deem expedient. Upon request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 20.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 20.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

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

§ 20.3 Termination by the Owner for Convenience

The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause. The Owner shall pay the Contractor for Work executed; and costs incurred by reason of such termination, including costs attributable to termination of Subcontracts; and a termination fee, if any, as follows:

(Insert the amount of or method for determining the fee payable to the Contractor by the Owner following a termination for the Owner's convenience, if any.)

ARTICLE 21 CLAIMS AND DISPUTES

§ 21.1 Claims, disputes, and other matters in question arising out of or relating to this Contract, including those alleging an error or omission by the Architect but excluding those arising under Section 16.2, shall be referred initially to the Architect for decision. Such matters, except those waived as provided for in Section 21.11 and Sections 15.7.3 and 15.7.4, shall, after initial decision by the Architect or 30 days after submission of the matter to the Architect, be subject to mediation as a condition precedent to binding dispute resolution.

§ 21.2 Notice of Claims

§ 21.2.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 18.2, shall be initiated by notice to the Architect within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 21.2.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 18.2, shall be initiated by notice to the other party.

§ 21.3 Time Limits on Claims

The Owner and Contractor shall commence all claims and causes of action against the other and arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in this Agreement whether in contract, tort, breach of warranty, or otherwise, within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all claims and causes of action not commenced in accordance with this Section 21.3.

§ 21.4 If a claim, dispute or other matter in question relates to or is the subject of a mechanic's lien, the party asserting such matter may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 21.5 The parties shall endeavor to resolve their disputes by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with their Construction Industry Mediation Procedures in effect on the date of this Agreement. A request for mediation shall be made in writing, delivered to the other party to this Agreement, and filed with the person or entity administering the mediation. The request may be made concurrently with the binding dispute resolution but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 21.6 If the parties have selected arbitration as the method for binding dispute resolution in this Agreement, any claim, subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association, in accordance with the

Construction Industry Arbitration Rules in effect on the date of this Agreement. Demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

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

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

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

§ 21.10 Continuing Contract Performance

Pending final resolution of a Claim, except as otherwise agreed in writing, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 21.11 Waiver of Claims for Consequential Damages

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

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

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 20. Nothing contained in this Section 21.11 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

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

OWNER (Signature)

(Printed name and title)

CONTRACTOR (Signature)

(Printed name and title)

**SECTION 00 7336
EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS**

PART 1 GENERAL

1.01 GENERAL

- A. The Contractor shall comply with all current Federal, State, and local laws and ordinances concerning Equal Employment Opportunity.
- B. The Contractor shall not discriminate against any employee or applicant for employment because of race, color, creed, religion, ancestry, national origin, sex, sexual orientation, gender identity, disability, age, marital status, familial status, or status with regard to a public assistance program.
- C. The Contractor shall take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to the foregoing. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer, recruitment, recruitment advertising; layoff or termination; rates of pay or other form of compensation and selection for training, including apprenticeship. The Contractor shall incorporate these same equal opportunity, anti-discrimination and affirmative action requirements into agreements between the Contractor and its Subcontractors.
- D. The Contractor must make and keep:
 - 1. The name, address and occupation of each employee;
 - 2. The rate of pay, and the amount paid each pay period to each employee;
 - 3. The hours worked each day and each work week by the employee; and
 - 4. Other information the Owner finds necessary and appropriate to enforce the requirements of these special provisions. The records must be kept for three years in or near the premises where an employee works.
- E. The Owner may demand, and the Contractor shall furnish the Owner's Name copies of any or all payrolls. When submitting payrolls, it will be necessary to report the numerical code that describes the applicable class of labor as set forth in the Minnesota Department of Labor and Industry.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01 1000 SUMMARY

PART 1 GENERAL

1.01 PROJECT

Franklin Avenue House

Watertown, Minnesota

1.02 THE WORK

- A. The Project consists of the construction of a single family home consisting of:
 - 1. 4 bedrooms and 1 $\frac{3}{4}$ bath.
 - 2. Slab-on-grade front porch.
 - 3. Two-stall garage.
 - 4. Related site improvements.
 - 5. Potential removal of a foundation system from a previous home on the site.

1.03 CONTRACT

- A. Contract Type: A single prime contract based on a Stipulated Price as described in Document 00 5000 - Contracting Forms and Supplements.

1.04 OWNER OCCUPANCY

- A. Owner intends to occupy the Project upon Substantial Completion.
- B. Schedule the Work to accommodate Owner occupancy.
- C. Prior to turning over the Project for occupancy, the following on site work and approvals must be completed:
 - 1. All required utility testing completed and accepted.

1.05 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: Limited to areas noted on Drawings.
 - 1. Locate and conduct construction activities in ways that will limit disturbance to site.
 - 2. Protect existing utilities scheduled to remain.
 - 3. Protect adjacent property belonging to others from damage during construction.
 - 4. Protect surrounding landscape materials noted to remain as indicated on the site plan.
- B. Provide access to and from site as required by law and by Owner:
 - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- C. Time Restrictions:
 - 1. No work will be performed before 8:30 a.m. or later than 5:00 p.m. Monday through Friday unless written permission is given by the Project Manager.
 - 2. Work can be performed on Saturdays only with written permission from the Project Manager.
 - 3. Except in the case of an emergency, no work will be performed on Sundays or holidays.
- D. Utility Outages and Shutdown:
 - 1. No utilities shut-down other than between the hours of 9:00 a.m. and 4:00 p.m. Monday through Friday.
 - 2. Prevent accidental disruption of utility services to other facilities.

1.06 SPECIFICATION FORMAT

- A. Specification Format: The Specifications are organized into Divisions and Sections using the 48-division format and CSI's "MasterFormat" numbering system.
 - 1. Division 01: Sections in Division 01 govern the execution of the Work of all Sections in the Specifications.

PART 2 PRODUCTS - NOT USED
PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 2000
PRICE AND PAYMENT PROCEDURES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Documentation of changes in Contract Sum and Contract Time.
- C. Change procedures.
- D. Procedures for preparation and submittal of application for final payment.

1.02 RELATED REQUIREMENTS

- A. Section 00 5000 - Contracting Forms and Supplements: Forms to be used.
- B. Section 00 7200 - General Conditions: Additional requirements for progress payments, final payment, changes in the Work.
- C. Section 01 7800 - Closeout Submittals: Project record documents.

1.03 SCHEDULE OF VALUES

- A. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Owner for approval.
- B. Forms filled out by hand will not be accepted.
- C. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.
- D. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification section. Identify site mobilization.
- E. Revise schedule to list approved Change Orders, with each Application For Payment.

1.04 INITIAL APPLICATION FOR PAYMENT

- A. Administrative actions and submittals that must precede or coincide with submittal of first application for payment include the following.
 - 1. List of subcontractors, principal suppliers and fabricators.
 - 2. Schedule of Values.
 - 3. Contractor's Construction Schedule (preliminary if not final).
 - 4. List of Contractor's staff assignments.
 - 5. List of Contractor's principal consultants.
 - 6. Performance and/or payment bonds if required by the contract.
 - 7. Copies of building permits.
 - 8. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 - 9. Initial progress report.
 - 10. Report of preconstruction conference.
 - 11. Certificates of insurance and insurance policies.
 - 12. Affirmative Action Plan.
 - 13. Non-Collusion Affidavit.

1.05 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified.
- C. Forms filled out by hand will not be accepted.
- D. For each item, provide a column for listing each of the following:
 - 1. Item Number.
 - 2. Description of work.

3. Scheduled Values.
 4. Previous Applications.
 5. Work in Place and Stored Materials under this Application.
 6. Authorized Change Orders.
 7. Total Completed and Stored to Date of Application.
 8. Percentage of Completion.
 9. Balance to Finish.
 10. Retainage.
- E. Execute certification by signature of authorized officer.
- F. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
- G. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.
- H. Submit one copy of each Application for Payment to the Owner for review 3 days prior to the draw meeting.
- I. Submit three copies of each Application for Payment for the draw meeting.
- J. Include the following with the application:
1. Transmittal letter as specified for submittals in Section 01 3000.
 2. Construction progress schedule, revised and current as specified in 01 3000.
 3. Partial release of liens from major subcontractors and vendors.
 4. Affidavits attesting to off-site stored products.
 - a. Include certificates of insurance for the storage facility with the Owner as a certificate holder.
 - b. Include evidence that the storage facility is bonded.
 - c. Include date stamped photographs of all stored material and equipment.
- K. When Owner requires substantiating information, submit data justifying dollar amounts in question.

1.06 MODIFICATION PROCEDURES

- A. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or subcontractors of changes to Contract Documents.
- B. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect, at the direction of the Owner, will issue instructions directly to Contractor.
- C. For other required changes, Architect, at the direction of the Owner, will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
 2. Promptly execute the change.
- D. For changes for which advance pricing is desired, Architect, at the direction of the Owner, will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 10 days.
- E. Contractor may propose a change by submitting a request for change to Owner, describing the proposed change and its full effect on the work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation. Document any requested substitutions in accordance with Section 01 6000.
- F. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.

1. For change requested by Owner for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
 2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Owner.
 3. For pre-determined unit prices and quantities, the amount will be based on the fixed unit prices.
 4. For change agreed to by the Owner without a quotation from Contractor, the amount will be determined by Owner based on the Contractor's substantiation of costs as specified for Time and Material work.
- G. Substantiation of Costs: Provide full information required for evaluation.
1. On request, provide the following data:
 - a. Quantities of products, labor, and equipment.
 - b. Taxes, insurance, and bonds.
 - c. Overhead and profit.
 - d. Justification for any change in Contract Time.
 - e. Credit for deletions from Contract, similarly documented.
 2. Support each claim for additional costs with additional information:
 - a. Origin and date of claim.
 - b. Dates and times work was performed, and by whom.
 - c. Time records and wage rates paid.
 - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
 3. For Time and Material work, agreed to by the owner, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
- H. Execution of Change Orders: Contractor will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- I. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
- J. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
- K. Promptly enter changes in Project Record Documents.

1.07 APPLICATION FOR PAYMENT AT SUBSTANTIAL COMPLETION

- A. After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
- B. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
- C. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- D. The retainage, agreed upon and documented in the Owner/Contractor Agreement will be held through completion.

1.08 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:
 1. All closeout procedures specified in Section 01 7000.
 2. Insurance certificates for products and completed operations where required and proof that taxes fees and similar obligations were paid.
 3. Contractor's Affidavit of Payment of Debts and Claims.
 4. Contractor's Affidavit of Release of Liens.

5. Consent of Surety to Final Payment.
6. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of, and assumed responsibility for, corresponding elements of the Work.
7. Final liquidated damages settlement statement if applicable.

END OF SECTION

SECTION 01 2200 UNIT PRICES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. List of unit prices, for use in preparing Bids.
- B. Measurement and payment criteria applicable to Work performed under a unit price payment method.
- C. Defect assessment and non-payment for rejected work.

1.02 RELATED REQUIREMENTS

- A. Section 01 2000 - Price and Payment Procedures: Additional payment and modification procedures.

1.03 COSTS INCLUDED

- A. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit including supervision and field personnel.
- B. Unit Prices for Unforeseen Conditions shall include labor, materials, dewatering, shoring, overhead, profit, insurance, etc., to cover the finished work of the several kinds called for. Changes shall be processed in accordance with the provisions of Section 00 7200 - General Conditions, and governing changes in the Work.

1.04 UNIT QUANTITIES SPECIFIED

- A. Quantities indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements of actual Work will determine the payment amount.

1.05 MEASUREMENT OF QUANTITIES

- A. Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specification section govern.
- B. Take all measurements and compute quantities. Measurements and quantities will be verified by Architect.
- C. For quantities of excavation, import or export of fill, aggregate or soils, verification shall be performed by the Geotechnical Engineer. Contractor shall keep records of load and weight tickets when available.
- D. Assist by providing necessary equipment, workers, and survey personnel as required.
- E. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.
- F. Measurement by Area: Measured by square dimension using mean length and width or radius.
- G. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.
- H. Perform surveys required to determine quantities, including control surveys to establish measurement reference lines. Notify Architect prior to starting work.
- I. Contractor's Engineer Responsibilities: Sign surveyor's field notes or keep duplicate field notes, calculate and certify quantities for payment purposes.

1.06 PAYMENT

- A. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities of Work that is incorporated in or made necessary by the Work and accepted by the Architect, multiplied by the unit price.
- B. Payment will not be made for any of the following:
 - 1. Products wasted or disposed of in a manner that is not acceptable.

2. Products determined as unacceptable before or after placement.
3. Loading, hauling, and disposing of rejected Products.

1.07 DEFECT ASSESSMENT

- A. Replace Work, or portions of the Work, not complying with specified requirements.
- B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct one of the following remedies:
 1. The defective Work may remain, but the unit price will be adjusted to a new unit price at the discretion of Architect.
 2. The defective Work will be partially repaired to the instructions of the Architect, and the unit price will be adjusted to a new unit price at the discretion of Architect.
- C. The authority of Architect to assess the defect and identify payment adjustment is final.

1.08 UNIT PRICES FOR UNFORESEEN CONDITIONS

- A. If unsatisfactory soil materials are encountered at design elevations and below those reasonably inferred from the contract documents, continue excavation as directed by the Architect, observed by the Geotechnical Consultant/Testing Agency, and approved by the Owner. If conditions are not a result of Contractor's negligence, additional excavation will be measured as directed by the Architect and paid for in accordance with contract conditions relative to changes in work. Deviation in quantities (credit or sold) of work shall be based on quantities of work observed by the Geotechnical Consultant/Testing Agency and be paid at unit prices (in place measurement) as described below.
- B. Prices indicated in the individual specification sections are for use in conjunction with payment on any claims for additional services for the base contract. Base bid earthwork correction shall reflect quantities on the soil report included in the specifications. Any claims for additional quantities of correction for these in the base bid shall be verified by the observations of the Soils Engineer making observations during the course of the work.
- C. General:
 1. Should certain additional work be required due to unforeseen conditions, or should the quantities of certain classes of work be increased or decreased from those required by the Contract Documents by authorization of the Owner, the below Unit Prices for Unforeseen Conditions shall, at the option of the Owner, be the basis for payment to the Contractor or credit to the Owner, for such increase or decrease in the work.
 2. The Unit Prices for Unforeseen Conditions shall represent the exact net amount per unit to be paid the Contractor (in case of additions or increases) or to be refunded the Owner (in case of subtractions or decreases). No additional adjustment will be allowed for mark-ups, overhead, profit, insurance, taxes, or other direct or indirect expenses of the Contractor or Subcontractors. No additional adjustments will be allowed for over excavation or other work without prior written approval of the Owner.
 3. As soon as the work involved in each Unit Price for Unforeseen Conditions item has been completed, submit documentation to establish the actual quantities provided. Submit to the Architect for review and issuance of a Change Order. Change Order amounts for each Unit Price for Unforeseen Conditions item will be based on actual quantities multiplied by the unit price.
 4. Incidental Work: Work incidental to Unit Prices for Unforeseen Conditions includes, but is not limited to erosion control, storm water management, dewatering, shoring, stockpiling, equipment rental, pre-cleaning, post-cleaning, protections of existing features outside area of new construction or repair, restoration of areas impacted by construction operations, loading, off-site disposal of excess and demolition materials, tests and inspections, field measurements for unit price payment, and other items necessary to the proper execution of the Unit Prices for Unforeseen Conditions item to cover the finished work of the several kinds called for.
 5. In-place volumes include the embankment volume of soil material removed from within the site in the case of cutting. In-place volumes include the compacted volume of soil material placed in its planned location within the site in the case of filling.

6. Application of Unit Prices for Unforeseen Conditions is determined by the Geotechnical Consultant/Testing Agency with approval of the Owner. The Geotechnical Consultant/Testing Agency will establish the extent and volume of Unit Prices for Unforeseen Conditions items.

1.09 SCHEDULE OF UNIT PRICES

- A. Unit Prices for Unforeseen Conditions: Refer to Section 31 0000 Earthwork for additional requirements.**
1. Unit Price No. 1: Removal of Unsuitable Soil Materials
 - a. Includes: Excavating Unsuitable Soil Materials to required elevations, loading and removing from site, and dewatering if required.
 - b. Measurement: By the cubic yard, in place volume.
 2. Unit Price No. 2: General Fill (approved on-site material)
 - a. Includes: Obtaining material from local area of construction or other on-site source that meets the requirements for the specified backfill material, stockpiling, scarifying substrate surface, placing where required, compacting materials, and compaction testing.
 - b. Does Not Include Over-Excavation: Payment will not be made for over-excavated work nor for replacement materials.
 - c. Measurement: By the cubic yard, in place volume.
 3. Unit Price No. 3: General Fill (off-site material):
 - a. Includes: Supplying General Fill, stockpiling, scarifying substrate surface, placing where required, compacting materials, and compaction testing.
 - b. Does Not Include Over-Excavation: Payment will not be made for over-excavated work nor for replacement materials.
 - c. Measurement: By the cubic yard, in place volume.
 4. Unit Price No. 4: Removal of Existing Concrete Building Slab and Foundation:
 - a. Includes: Excavation of existing concrete slab and foundation, loading and removing from site, backfill of excavated area with onsite materials as required.
 - b. Does Not Include: Additional concrete removal from sidewalk onsite that is called out on the plans for removal.
 - c. Measurement: By the ton, concrete hauled off site (contractor to provide truck loading tickets).

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01 2300 ALTERNATES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Description of Alternates.
- B. Procedures for pricing Alternates.

1.02 DEFINITIONS

- A. Alternate: an amount proposed by Bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if the Owner decides to accept a corresponding change in either scope of work or in products, materials, equipment, systems or installation methods described in Contract Documents.
 - 1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.03 ACCEPTANCE OF ALTERNATES

- A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in the Owner-Contractor Agreement.
- B. Coordinate related work and modify surrounding work to integrate the Work of each accepted Alternate.
 - 1. Include as part each alternate, miscellaneous devices, appurtenances and similar items incidental to or required for a complete installation whether or not indicated as part of the alternate.
- C. Notification: Immediately following award of Contract, prepare and distribute to each party involved, in writing, notification of the status of each alternate. Indicate whether alternates have been accepted, rejected or deferred for consideration at a later date. Include a complete description of negotiated modifications to alternates, if any.
- D. Execute accepted alternates under the same conditions as other work of the Contract.

1.04 SCHEDULE OF ALTERNATES

- A. A Schedule of Alternates is included in this Section below. Specification Sections referenced in this schedule contain requirements for materials necessary to achieve the work described under each alternate.
- B. Alternate No. 1 - Concrete Walk:
 - 1. Base Bid Item: Reuse the existing concrete walk from the street to the location shown on 1/C102.
 - 2. Alternate Item: Demo and rebuild the concrete walk from the street to the location delineating old/new on 1/C102.
- C. Alternate No. 2 - Backyard Patio:
 - 1. Base Bid Item: No backyard patio and associated plantings included in the work.
 - 2. Alternate Item: Provide the patio as shown on 2/C102 and planting configuration as shown on 1/L102.
- D. Alternate No. 3 - Asphalt Driveway:
 - 1. Base Bid Item: Provide an aggregate driveway as shown on 1/C102.
 - 2. Alternate Item: Provide an asphalt driveway as shown on 2/C102.
- E. Alternate No. 4 - Concrete Apron:
 - 1. Base Bid Item: No concrete apron at the OH garage door provided.
 - 2. Alternate Item: Provide a concrete apron at the OH garage door as shown on 2/C102.
- F. Alternate No. 5 - Finished Basement:
 - 1. Base Bid Item: The rooms marked 'unfinished' on the basement plan remain unfinished

2. Alternate Item: Finish the rooms marked as 'unfinished' on the basement plan per the alternate finishes listed on the finish schedule.
- G. Alternate No. 6 - Hayfield Vinyl Classic Windows:
 1. Base Bid Item: Provide Classic Termo-tech vinyl w
 2. Alternate Item: Provide Hayfield vinyl classic windows
- H. Alternate No. 7 - James Hardie Siding:
 1. Base Bid Item: Provide LP siding products as specified.
 2. Alternate Item: Install James Hardie products in lieu of LP. All products are to match in size and thickness.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 3000
ADMINISTRATIVE REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General administrative requirements.
- B. Preconstruction meeting.
- C. Progress meetings.
- D. Construction progress schedule.
- E. Submittals for review, information, and project closeout.
- F. Number of copies of submittals.
- G. Requests for Interpretation (RFI) procedures.
- H. Submittal procedures.
- I. Electronic (CAD) drawing files.

1.02 RELATED REQUIREMENTS

- A. Section 00 7300 - Supplementary Conditions: Limited License Agreement for digital documents.
- B. Section 01 6000 - Product Requirements: General product requirements & Substitutions
- C. Section 01 7000 - Execution and Closeout Requirements: Additional coordination requirements.
- D. Section 01 7800 - Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.
- E. Section 01 8113 - Sustainable Design Requirements: Sustainable project guidelines, testing, inspections, and certifications.

1.03 GENERAL ADMINISTRATIVE REQUIREMENTS

- A. Comply with requirements of Section 01 7000 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.
- B. The Project Manager and the Project Superintendent required to be employed by the Contractor for this project, shall be experienced in the type of project documented and shall be acceptable to the Owner.
- C. Make the following types of submittals to Owner:
 - 1. Requests for Interpretation (RFI).
 - 2. Requests for substitution.
 - 3. Shop drawings, product data, and samples.
 - 4. Test and inspection reports.
 - 5. Manufacturer's instructions and field reports.
 - 6. Applications for payment and change order requests.
 - 7. Progress schedules.
 - 8. Coordination drawings.
 - 9. Correction Punch List and Final Correction Punch List for Substantial Completion.
 - 10. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

- A. General Contractor will schedule a meeting after the notice to proceed has been received and prior to the start of construction.
 - 1. Prepare the meeting agenda. Distribute the agenda to all invited attendees.

- B. Attendance Required:
 - 1. Owner.
 - 2. Contractor.
 - 3. Major Subcontractors.
 - 4. Major Suppliers.
- C. Agenda:
 - 1. Introductions of all attendees and their organizations and designated duties and responsibilities during construction.
 - 2. Review and discuss status of required pre-construction submittals including but not limited to proof of insurance coverage and executed bonds.
 - 3. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
 - 4. Determine progress meeting dates that work with all those who will attend.
 - 5. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 - 6. Scheduling activities of testing engineer.
 - 7. Review sustainable design requirements, testing, inspections, and certifications.
 - 8. Critical work sequencing and long-lead items.
 - 9. Use of the premises.
 - 10. Owner's occupancy requirements.
 - 11. Responsibility for temporary facilities and controls.
 - 12. Construction waste management and recycling.
 - 13. Parking availability.
 - 14. Office, work, and storage areas.
 - 15. Equipment deliveries and priorities.
 - 16. First aid.
 - 17. Security.
 - 18. Progress cleaning.
 - 19. Working hours.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Owner, participants, and those affected by decisions made.

3.02 PROGRESS MEETINGS

- A. The General Contractor shall schedule and administer meetings throughout progress of the Work as directed by the Owner.
- B. Attendance Required:
 - 1. Contractor.
 - 2. Owner.
 - 3. Contractor's superintendent.
 - 4. Major subcontractors.
- C. Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of work progress.
 - 3. Review contractors 2 week look-ahead schedule.
 - 4. Review Requests for Interpretation.
 - 5. Field observations, problems, and decisions.
 - 6. Identification of problems that impede, or will impede, planned progress.
 - 7. Review of submittals schedule and status of submittals.
 - 8. Review of RFIs log and status of responses.
 - 9. Review of off-site fabrication and delivery schedules.
 - 10. Maintenance of progress schedule.
 - 11. Corrective measures to regain projected schedules.
 - 12. Planned progress during succeeding work period.

13. Coordination of projected progress.
 14. Maintenance of quality and work standards.
 15. Effect of proposed changes on progress schedule and coordination.
 16. Other business relating to work.
 17. Status of Change Orders.
 18. Documentation of information for payment requests.
- D. Record minutes and distribute copies within two days after meeting to participants, with copies to Owner, participants, and those affected by decisions made.

3.03 CONSTRUCTION PROGRESS SCHEDULE

- A. Provide Gantt-Chart type schedule.
- B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
- D. Within 10 days after joint review, submit complete schedule.
- E. Submit updated schedule with each Application for Payment.
 1. Include 2 week look-ahead schedule prepared by the site superintendent.

3.04 REQUESTS FOR INTERPRETATION (RFI)

- A. Definition: A request seeking one of the following:
 1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
 2. A resolution to an issue which has arisen due to field conditions and affects design intent.
- B. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
 1. Prepare a separate RFI for each specific item.
 - a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
 - b. Do not forward requests which solely require internal coordination between subcontractors.
 2. Prepare in a format and with content acceptable to Owner.
 3. Combine RFI and its attachments into a single electronic file. PDF format is preferred.
- C. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
 1. Include in each request Contractor's signature attesting to good faith effort to determine from Contract Documents information requiring interpretation.
 2. Unacceptable Uses for RFIs: Do not use RFIs to request the following::
 - a. Approval of submittals (use procedures specified elsewhere in this section).
 - b. Approval of substitutions (see Section - 01 6000 - Product Requirements)
 - c. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Conditions of the Contract).
 - d. Different methods of performing work than those indicated in the Contract Drawings and Specifications (comply with provisions of the Conditions of the Contract).
 3. Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.
 4. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, Contract Documents, with no additional input required to clarify the question. They will be returned without a response, with an explanatory notation.

- a. The Owner reserves the right to assess the Contractor for the costs (on time-and-materials basis) incurred by the Architect, and any of its consultants, due to processing of such RFIs.
- D. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
 - 1. Official Project name and number, and any additional required identifiers established in Contract Documents.
 - 2. Owner's, Architect's, and Contractor's names.
 - 3. Discrete and consecutive RFI number, and descriptive subject/title.
 - 4. Issue date, and requested reply date.
 - 5. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
 - 6. Annotations: Field dimensions and/or description of conditions which have engendered the request.
 - 7. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.
- E. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.
- F. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
- G. Review Time: Owner will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.
 - 1. Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.
- H. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.
 - 1. Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.
 - 2. Do not extend applicability of a response to specific item to encompass other similar conditions, unless specifically so noted in the response.
 - 3. Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.

3.05 SUBMITTAL SCHEDULE

- A. Submit to Owner for review a schedule for submittals in tabular format.
 - 1. Coordinate with Contractor's construction schedule and schedule of values.
 - 2. Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.

3.06 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
 - 1. Product data.
 - 2. Shop drawings.
 - 3. Samples for selection.
 - 4. Samples for verification.

- B. Submit to Owner for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.
- C. Samples will be reviewed for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 7800 - Closeout Submittals.

3.07 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
 - 1. Design data.
 - 2. Certificates.
 - 3. Test reports.
 - 4. Inspection reports.
 - 5. Manufacturer's instructions.
 - 6. Manufacturer's field reports.
 - 7. Standards.
 - a. Where submittal of a copy of standards is indicated, and except where copies of standards are specified as an integral part of a "Product Data" submittal, submit an electronic copy of the standard for the Owner's use. Where workmanship, whether at the project site or elsewhere is governed by a standard, furnish copies of the standard to fabricators, installers and others involved in the performance of the Work.
 - 8. Other types indicated.
- B. Submit for Owner's knowledge as contract administrator.

3.08 SUBMITTALS FOR PROJECT CLOSEOUT

- A. Submit Correction Punch List for Substantial Completion.
- B. Submit Final Correction Punch List for Substantial Completion.
- C. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 7800 - Closeout Submittals:
 - 1. Project record documents.
 - 2. Operation and maintenance data.
 - 3. Warranties.
 - 4. Bonds.
 - 5. Sustainable Design submittals (Green Communities, Energy Star, B3, SB2030, etc)
 - 6. As-built survey.
 - 7. Extra materials.
 - 8. Other types as indicated.
- D. Submit for Owner's benefit during and after project completion.

3.09 NUMBER OF COPIES OF SUBMITTALS

- A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
- B. Extra Copies at Project Closeout: See Section 01 7800.
- C. Samples: Submit the number specified in individual specification sections; one of which will be retained by Owner.
 - 1. After review, produce duplicates.
 - 2. Retained samples will not be returned to Contractor unless specifically so stated.

3.10 SUBMITTAL PROCEDURES

- A. General Requirements:
 - 1. Use a separate transmittal for each item.
 - 2. Submit separate packages of submittals for review and submittals for information, when included in the same specification section.
 - 3. Transmit using approved form.

- a. Use Contractor's form, subject to prior approval by Owner.
 4. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
 5. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
 6. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
 - a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
 7. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
 8. Schedule submittals to expedite the Project, and coordinate submission of related items.
 - a. For each submittal for review, allow 10 days excluding delivery time to and from the Contractor.
 - b. For sequential reviews involving Owner's consultants, Owner, or another affected party, allow an additional 7 days.
 - c. For sequential reviews involving approval from authorities having jurisdiction (AHJ), in addition to Owner's approval, allow an additional 30 days.
 - d. Owner reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
 9. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
 10. Provide space for Contractor and Owner review stamps.
 11. When revised for resubmission, identify all changes made since previous submission.
 12. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
 13. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
 14. Submittals not requested will be recognized, and will be returned "Not Reviewed".
- B. Product Data Procedures:
1. General: Product data includes standard printed information on manufactured products that has not been specially prepared for this project. Information required specifically as product data includes manufacturer's standard printed recommendations for application and use, compliance with recognized standards of trade associations and testing agencies and the application of their labels and seals (if any).
 2. Submit only information required by individual specification sections.
 3. Collect required information into a single submittal.
 4. Mark the submittal to show which choices and options are applicable to the project. Where product data includes information for several similar products, some of which are not required for use on the project, mark the submittal to show clearly that such information is not applicable.
 5. Submit concurrently with related shop drawing submittal.
 6. Do not submit (Material) Safety Data Sheets for materials or products.
 7. Submit sustainable design reporting submittals under separate cover.
- C. Shop Drawing Procedures:
1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
 2. Do not reproduce Contract Documents to create shop drawings.
 3. The limited use of computer drawing files may be available under a Limited License Agreement and for a fee. See the Section 00 7300 Supplementary Conditions.
 4. Provide special notation of dimensions that have been established by field measurement. Highlight, encircle or otherwise indicate deviations from the contract documents on the shop drawings.

5. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.
- D. Samples Procedures:
1. Transmit related items together as single package.
 2. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.
 3. Provide physical samples 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.
 4. All exterior material physical samples shall be submitted prior to review of any exterior material physical samples.
 5. All interior material physical samples shall be submitted prior to review of any interior material physical samples.
- E. Maintain full set of final submittals at the job site, with mark indicating action taken by Own in connection with construction.
- F. Maintain full set 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.

3.11 SUBMITTAL REVIEW

- A. Submittals for Review and Submittals for Information: Owner will review each submittal, and approve, or take other appropriate action.
- B. Owner's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
1. Notations may be made directly on submitted items and/or listed on appended Submittal Review cover sheet.

3.12 ELECTRONIC (CAD) DRAWING FILES

- A. Architect will provide Contractor or its Subcontractors with CAD background files, in .DWG format, only upon the following conditions:
1. Drawing files requested were prepared by the Architect and not by the Architect's Consultant; Requests for drawing files prepared by Architect's Consultant may include alternate requirements.
 2. Architect obtains approval from Owner.
 3. Receipt of Architect's Limited License Agreement (LLA) prepared and signed by Architect and Contractor or its Subcontractor.
 4. Receipt of \$500 service fee payable to LHB.
 5. Electronic drawing files will only be provided to the party that signed the LLA and that party assumes the responsibility and the risk of conversion into another format.

END OF SECTION

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SECTION 01 4000 QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Submittals.
- B. Testing and inspection agencies and services.
- C. Tolerances.
- D. Manufacturers' field services.
- E. Defect Assessment.

1.02 RELATED REQUIREMENTS

- A. Section 01 3000 - Administrative Requirements: Submittal procedures.
- B. Section 01 6000 - Product Requirements: Requirements for material and product quality.
- C. Section 01 70 00 - Execution and Closeout Requirements: Cutting and Patching.
- D. See Division 02 through 33 Sections and the Drawings for specific test and inspection requirements.

1.03 REFERENCE STANDARDS

- A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants; 2008 (Reapproved 2023).
- B. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation; 2024.
- C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2023.
- D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2023.
- E. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2023.
- F. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2021.
- G. IAS AC89 - Accreditation Criteria for Testing Laboratories; 2021.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- C. Manufacturer's Field Reports: Submit reports for Owner's benefit as contract administrator.
 - 1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the contract documents.

1.05 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. The Owner will employ and pay for the services of an Energy Professional to conduct testing and inspections related to the building envelope and energy efficiency.
 - 1. As required by Enterprise Green Communities and the Minnesota Housing Overlay.
 - a. Attic bypass sealant tests.
 - b. Attic duct sealant tests.
 - c. HERS rating blower-door tests.
 - d. See Section 01 8113.
 - 2. As required by the Minnesota Energy Code.

- B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Owner before proceeding.
- D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Owner before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

3.03 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not complying with specified requirements.
- B. If, in the opinion of Architect, it is not practical to remove and replace the work, Architect will direct an appropriate remedy or adjust payment.

END OF SECTION

SECTION 01 5000
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary utilities.
- B. Temporary telecommunications services.
- C. Temporary sanitary facilities.
- D. Temporary Controls: Barriers and enclosures.
- E. Security requirements.
- F. Vehicular access and parking.
- G. Waste removal facilities and services.
- H. Project identification sign.
- I. Field offices.

1.02 RELATED REQUIREMENTS

- A. Section 01 7419 - Construction Waste Management and Disposal: Construction waste recycling.

1.03 TEMPORARY UTILITY SERVICES

- A. Where the local utility company provides only a portion of the temporary utility, provide the remainder with matching, compatible materials and equipment. Comply with the utility company's recommendations. Use qualified workers for installation of temporary services and facilities. Locate temporary services and facilities where they will serve the entire project adequately and result in minimum interference with the performance of the Work. Relocate, modify and extend services and facilities as required during the course of work so as to accommodate the entire work of the project. Engage the local utility company to install temporary service to the project, or to make connections to existing service. Where necessary, arrange for an acceptable time when service can be interrupted to make connections for temporary services.
- B. Temporary utility services required for use at the project site may include but are not limited to the following:
 - 1. Water service and distribution: Install water service and distribution piping of sizes and pressures adequate for construction purposes during the construction period and until permanent service is in use. Pay water service use charges, whether metered or otherwise, for all water used by entities authorized to be at or to perform work at the project site.
 - 2. Temporary electric power and light: Provide a weatherproof, grounded temporary electric power service and distribution system of sufficient size, capacity and power characteristics to accommodate performance of work during the construction period. Whenever an overhead floor or roof deck has been installed, install temporary lighting adequate to provide sufficient illumination for safe work and traffic conditions in every area of work. Comply with applicable NEMA, NECA and UL standards and governing regulations for materials and layout of temporary electric service, including those requirements included in Division 26 sections. Allow for operation of security and protection requirements, without the necessity of operating the entire temporary lighting system. Protect lamps where fixtures are exposed to breakage by construction operations. Provide exterior fixtures where fixtures are exposed to the weather or moisture. Remove the temporary system when no longer needed.
- C. Provide and pay for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes.

1.04 TELECOMMUNICATIONS SERVICES

- A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.
- B. Telecommunications services shall include:
 - 1. Internet Connections: Minimum of one; DSL modem or faster.

1.05 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. Maintain daily in clean and sanitary condition.

1.06 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide protection for plants designated to remain. Replace damaged plants.
- C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.
- D. Traffic Controls: Warning Lights and Signs: Appropriate signing and barricades shall be placed notifying the public of construction activities. Warning signs and barricades shall be in compliance with the Minnesota Manual on Uniform Traffic Control Devices. Roadway closing shall be coordinated with the City. Comply with recognized standards and code requirements for the erection of substantial, structurally adequate barricades where needed to prevent accidents and losses. Paint with appropriate colors, graphics and warning signs to inform personnel at the site and the public, of the hazard being protected against. Provide lighting, including flashing lights, where appropriate and needed.

1.07 EXTERIOR ENCLOSURES

- A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.
- B. Temporary Heat: Provide temporary heat where needed for performance of the Work, curing or drying of recently installed work or protection of work in place from adverse effects of low temperatures or high humidity. Select facilities known to be safe and without deleterious effect upon the Work in place or being installed. Coordinate with ventilation requirements to maintain an appropriate minimum temperature in permanently enclosed portions of the building and areas where finished work has been installed. Provide temporary heating units that have been tested and labeled by UL, FM, or other recognized trade association related to the fuel being consumed. The permanent boiler equipment may be used after it has been completed. Use of the permanent heating equipment for construction purposes shall not alter or shorten the Owner's warranty in any way. If permanent equipment is used, all units and filters shall be cleared or replaced at substantial completion. Contractor shall pay cost of heat source until Substantial Completion.

1.08 INTERIOR ENCLOSURES

- A. Provide temporary partitions and ceilings as indicated to separate work areas from Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.
- B. Construction: Framing and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces:

1.09 SECURITY

- A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

- B. Temporary Fire Protection: Develop and supervise an overall fire prevention, first-aid and fire protection program for personnel at the project site. Review needs with the local fire department officials and establish procedures to be followed. Instruct personnel in methods and procedures to be followed. Comply with the applicable recommendations of NFPA Standard 10 "Standard for Portable Fire Extinguishers". Locate fire extinguishers where they are most convenient and effective for their intended purpose. Store combustible materials in containers in recognize fire-safe locations. Post warnings and information and enforce strict discipline. Maintain unobstructed access to fire extinguishers, fire hydrants and other hazardous fire exposure area. Prohibit smoking in hazardous fire exposure areas. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of ignition for possible fires.

1.10 VEHICULAR ACCESS AND PARKING

- A. Coordinate access and haul routes with governing authorities and Owner.
- B. Provide and maintain access to fire hydrants, free of obstructions.
- C. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

1.11 WASTE REMOVAL

- A. See Section 01 7419 - Construction Waste Management and Disposal, for additional requirements.
- B. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- C. Provide containers with lids. Remove trash from site periodically.
- D. Street and/or Sidewalk Cleaning: Provide as required by City Ordinances.

1.12 WINTER CONDITIONS

- A. Contractor shall allow for normal seasonal conditions in scheduling and estimating. The provision of heat, thawing, insulating and other activities typically required in the seasons, during which Construction will be performed, shall be included in the base price and shall not be separately billed to the Owner.

1.13 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.
- B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.

1.14 REGULATIONS

- A. Comply with requirements of local laws and regulations governing construction and local industry standards, in the installation and maintenance of temporary services and facilities. Regulations which must be complied with for the project include but are not limited to the following:
 - 1. Building Codes including local requirements of permits, testing and inspection.
 - 2. Health and safety regulations.
 - 3. Utility company regulations and recommendations governing temporary utility services.
 - 4. Police and Fire Department rules and recommendations.
 - 5. Police and Rescue Squad recommendations.
 - 6. Environmental protection regulations governing use of water and energy, and the control of dust, noise and other nuisances.
 - 7. Stormwater and erosion control regulations.

1.15 STANDARDS

- A. Provide only materials and equipment that are recognized as being suitable for the intended use, by compliance with appropriate standards. Comply with the requirements of NFPA Code

241, "Building Construction and Demolition Operations", the ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition", and the NECA National Joint Guideline NJG-6 "Temporary Job Utilities and Services".

1.16 INSPECTIONS

- A. Arrange for required inspections and tests by governing authorities, and obtain required certifications and permits for use.

PART 2 PRODUCTS

2.01 GENERAL

- A. Provide each temporary service and facility ready for use at each location when the service or facility is first needed to avoid delay in performance of the Work. Maintain, expand as required and modify temporary services and facilities as needed throughout the progress of the Work.
- B. At the earliest feasible time, change over from the use of temporary utility service to the use of the permanent service, to enable removal of the temporary utility and to eliminate possible interference with completion of the Work.
- C. Operate and maintain temporary services and facilities in a safe and efficient manner. Do not overload temporary services or facilities, and do not permit them to interfere with the progress of the Work. Do not allow unsanitary conditions, public nuisances or hazardous conditions to develop or persist on the site. Take necessary fire prevention measures. Maintain site security and protection facilities in a safe, lawful and publicly acceptable manner.

PART 3 EXECUTION

3.01 GENERAL

- A. Enforce strict discipline in use of temporary services and facilities at the site. Limit availability of temporary services and facilities to essential and intended uses to minimize waste and abuse. Do not allow hazardous, dangerous or unsanitary conditions to develop or persist on the project site. Maintain the operation of temporary enclosures, heating cooling, humidity control, ventilation and similar facilities as required to achieve indicated results in the Work and to avoid the possibility of damage to the Work or to temporary facilities.
- B. Remove each temporary service and facility promptly when the need for it has been replaced by the use of a permanent facility, or no later than substantial completion. Repair damaged work, clean exposed surfaces and replace work which cannot be satisfactorily repaired. At substantial completion, clean and renovate permanent services and facilities that have been used to provide temporary services and facilities during the construction period.

END OF SECTION

SECTION 01 5713
TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Obtain and comply with NPDES Permit.
- B. Implement SWPPP Plan for this project as prepared by the Owner's consultant.
- C. Prevention of erosion due to construction activities.
- D. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.
- E. Restoration of areas eroded due to insufficient preventive measures.
- F. Compensation of Owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

1.02 RELATED REQUIREMENTS

- A. Section 31 0000 - Earthwork.

1.03 REFERENCES

- A. Developing your Stormwater Pollution Prevention Plan, US Environmental Protection Agency.
- B. Minnesota Stormwater Manual, Minnesota Pollution Control Agency.
- C. EPA (NPDES) - National Pollutant Discharge Elimination System (NPDES), Construction General Permit; Current Edition.

1.04 PERFORMANCE REQUIREMENTS

- A. Comply with requirements of EPA (NPDES) for erosion and sedimentation control, as specified by the NPDES, for Phases I and II, and in compliance with requirements of Construction General Permit (CGP), whether the project is required by law to comply or not.
- B. Also comply with all more stringent requirements of State of Minnesota Erosion and Sedimentation Control Manual.
- C. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.
- D. Install all controls required for compliance with permit:
 - 1. Best Management Practices (BMP) including silt fence, perimeter controls, soil stabilization, sediment controls, wash-out area, construction entrances, spill protection, storage areas, signage and other as required.
 - 2. Implement regular maintenance inspections and logging programs and document these as required.
 - 3. Maintain records on site.
 - 4. Provide education of employees for compliance with referenced standards.
- E. Perform all interim measures to comply with requirements including mulching and temporary seeding.
- F. Clean, maintain, repair and enhance all in-place controls during the project.
- G. Pay all fines and assessments levied during this project for non-compliance and reimburse Owner for all costs incurred by owner due to contractor non-compliance.
- H. Remove all temporary installations, install or repair all items that are to remain in place and file all required notices of termination at the end of the project.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Provide stormwater erosion and sedimentation control materials as noted on the drawings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

- A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

3.03 SCOPE OF PREVENTIVE MEASURES

- A. Provide specific measures for stormwater, erosion and sedimentation control as outlined in the performance requirements in this Section.

3.04 CLEAN UP

- A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Architect.
- B. Clean out temporary sediment control structures that are to remain as permanent measures.
- C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION

**SECTION 01 6000
PRODUCT REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General product requirements.
- B. Transportation, handling, storage and protection.
- C. Product option requirements.
- D. Substitution limitations & procedures.
- E. Substitution Request Form
 - 1. This form is attached to the end of this section and must be used for all substitution requests.
- F. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary: Lists of products to be removed from existing building.
- B. Section 01 8113 - Sustainable Design Requirements.

1.03 REFERENCE STANDARDS

1.04 QUALITY ASSURANCE

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

2.02 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by Contract Documents.

2.03 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product (and manufacturer) that complies with other specified requirements.
 - 1. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Owner will select color, pattern, or texture from manufacturer's product line that does not include premium or custom items.
 - 2. Premium/Custom Range: Where Specifications include the phrase "premium/custom range of colors, patterns, textures" or similar phrase, Owner will select color, pattern, or texture from manufacturer's product line that includes both premium and custom items.

2.04 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION LIMITATIONS & PROCEDURES

- A. General
 - 1. The Contractor's submittal of and the Owner's acceptance of shop drawings, product data or samples which relate to work not complying with requirements of the contract

documents does not constitute an acceptable or valid request for a substitution, nor approval thereof.

2. The Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, The Architect will not review the request.
 - a. Requested substitution is fully documented and properly submitted using the "Substitution Request Form"
 - 1) Substitutions submitted without this form will not be reviewed.
 - b. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - c. Requested substitution does not require extensive revisions to the Contract Documents.
 - d. Requested substitution is consistent with the Contract Documents, is equal to or superior to the specified product, and will meet the design intent.
 - e. Requested substitution will not adversely affect Contractor's Construction Schedule.
 - f. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - g. Requested substitution is compatible with other portions of the Work and will be incorporated into the Work at no additional cost to the Owner.
 - h. Requested substitution has been coordinated with other portions of the Work.
 - i. Requested substitution provides specified warranty.
- B. Substitutions during bidding
 1. Architect will consider requests for substitution up to and including the fourth day before bids are due. After this time an addendum will be issued listing all accepted substitutions.
 2. Substitutions that are not accepted will not be acknowledged nor will reasons be given.
 3. Substitutions received after this time will not be reviewed or returned.
- C. Substitutions after award of the contract
 1. Architect will consider requests for substitution after award of the contract only in the following cases.
 - a. Original product is no longer available (discontinued by manufacturer.)
 - b. Acquisition of original product will negatively affect the construction schedule.
 - 1) This alternative product consideration will not be given if the Contractor did not try to procure the original product in a timely manner.

3.02 TRANSPORTATION AND HANDLING

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.

3.03 STORAGE AND PROTECTION

- A. Provide protection of stored materials and products against theft, casualty, or deterioration.

- B. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 7419.
 - 1. Structural Loading Limitations: Handle and store products and materials so as not to exceed static and dynamic load-bearing capacities of project floor and roof areas.
- C. Store and protect products in accordance with manufacturers' instructions.
- D. Store with seals and labels intact and legible.
- E. Arrange storage of materials and products to allow for visual inspection for the purpose of determination of quantities, amounts, and unit counts.
- F. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.
- G. For exterior storage of fabricated products, place on sloped supports above ground.
- H. Provide bonded & insured off-site storage and protection when site does not permit on-site storage or protection.
 - 1. Execute a formal supplemental agreement between Owner and Contractor allowing off-site storage, for each occurrence.
 - a. Agreement to include affidavits attesting to off-site stored products.
 - 1) Include certificates of insurance for the storage facility with the Owner as a certificate holder.
 - 2) Include evidence that the storage facility is bonded.
 - 3) Include date stamped photographs of all stored material and equipment.
- I. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- J. Comply with manufacturer's warranty conditions, if any.
- K. Do not store products directly on the ground.
- L. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- M. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- N. Prevent contact with material that may cause corrosion, discoloration, or staining.
- O. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- P. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

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SUBSTITUTION REQUEST

Forms are due October 31, 2024 by 5:00 PM CST. Incomplete forms will not be processed

Project Name: Franklin Avenue House LHB Project No.: 240559
To: LHB
Attention: Andy Madson
Email: Andy.Madson@LHBcorp.com

Submitted By: _____ Date: _____

Section Number: _____ Paragraph: _____

Specified Product: _____

Proposed Product: _____

Reason For Substitution: _____

Description of Proposed Substitution (Note: Limit this Request to one substitution)

Manufacturer: _____ Trade Name: _____

CONTACT info@thejournalofmanagement.com

Model Number: _____ Person: _____

Phone Number: _____

History: ☐ New Product ☐ 2 to 5 Years Old ☐ 5 to 10 Years Old ☐ More than 10 Years Old

Attach complete technical data, literature and sample, if applicable

1. Does proposed substitution fail to satisfy, in any respect, characteristics specified for original product(s)? ☐ Y ☐ N
2. Does substitution affect dimensions shown on Drawings? ☐ Y ☐ N
3. Does substitution affect other parts of the Work (schedule, warranty, etc.) ☐ Y ☐ N
4. Does substitution affect cost to Owner? ☐ Y ☐ N
 - a. If so, how much? Add \$ _____ Deduct \$ _____
5. If you indicated "Yes" to any of the items above, provide the following explanation:
6. Explain any difference between proposed substitution and specified product.
7. Summarize experience with product and manufacturer in Project area.

Contractor's Certification

The undersigned states, proposing this Substitution, certifies the following as true and correct and accepts all conditions relating to this request:

- This Substitution has been fully investigated and determined to be equal or superior in all respects.
- The same warranty will be furnished.
- The same maintenance service and source of replacement parts, as applicable, is available.
- The change to the Construction Progress Schedule is unchanged.
- The cost data as stated above is complete. All claims for any additional costs related to this Substitution does not affect dimensions or functional clearances.
- The Substitution does not affect dimensions or functional clearances.
- All Architectural/Engineering design fees associated with the review, evaluation, and or design and detailing changes as a result of this Substitution Request are the responsibility of the Contractor. The amount of these fees will be deducted from the Contract Sum due to the Contractor.
- Coordination, installation, and changes to the Work as necessary for an accepted Substitution will be complete in all respects.

Submitted By: _____

Signature: _____

Firm: _____

Address: _____

Telephone: _____

For Use By Architect / Engineer

- ☐ Substitution Recommended: Make submittals in accordance with Specifications.
- ☐ Substitution Recommended as Noted: Make submittals in accordance with Specifications.
- ☐ Substitution Rejection Recommended: Use specified products. Architect shall not be held responsible for the performance of any substitution accepted or approved by Owner over the recommendation of the Architect (Release and Indemnification Agreement between Owner and Architect required).
- ☐ Substitution Request received after deadline: Use specified products.
- ☐ Substitution Request returned: Incomplete submittal, use specified products.

Comments:

Signature: _____ Date: _____

NOTE: If approved, LHB will include product approval in Addendum

SECTION 01 7000
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Requirements for alterations work, including selective demolition.
- C. Pre-installation meetings.
- D. Cutting and patching.
- E. Surveying for laying out the work.
- F. Cleaning and protection.
- G. Starting of systems and equipment.
- H. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
- I. General requirements for maintenance service.

1.02 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.
- B. Section 01 3000 - Administrative Requirements: Submittals procedures, Electronic document submittal service.
- C. Section 01 4000 - Quality Requirements: Testing and inspection procedures.
- D. Section 01 5000 - Temporary Facilities and Controls: Temporary exterior enclosures.
- E. Section 01 5000 - Temporary Facilities and Controls: Temporary interior partitions.
- F. Section 01 5100 - Temporary Utilities: Temporary heating, cooling, and ventilating facilities.
- G. Section 01 5713 - Temporary Erosion and Sediment Control: Additional erosion and sedimentation control requirements.
- H. Section 01 7419 - Construction Waste Management and Disposal: Additional procedures for trash/waste removal, recycling, salvage, and reuse.
- I. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance data, warranties, and bonds.
- J. Section 01 8113 - Sustainable Design Requirements: Green Communities Requirements
- K. Section 07 8400 - Firestopping.
- L. Individual Product Specification Sections:
 - 1. Advance notification to other sections of openings required in work of those sections.
 - 2. Limitations on cutting structural members.

1.03 REFERENCE STANDARDS

- A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2022, with Errata (2021).

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
- C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.

4. Visual qualities of sight exposed elements.

D. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.05 QUALIFICATIONS

- A. For surveying work, employ a land surveyor registered in the State in which the Project is located and acceptable to Architect. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities,
- B. For field engineering, employ a professional engineer of the discipline required for specific service on Project, licensed in the State in which the Project is located. Employ only individual(s) trained and experienced in establishing and maintaining horizontal and vertical control points necessary for laying out construction work on project of similar size, scope and/or complexity.
- C. For design of temporary shoring and bracing, employ a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

1.06 PROJECT CONDITIONS

- A. Use of explosives is not permitted.
- B. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- C. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.
- D. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- E. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
- F. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
- G. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
- H. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
- I. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.07 COORDINATION

- A. See Section 01 1000 for occupancy-related requirements.
- B. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later. Include preparation of general coordination drawings, diagrams and schedules, and control of site utilization, from beginning of construction activity through project closeout and warranty periods.
- C. Notify affected utility companies and comply with their requirements.
- D. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- E. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces

efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

- F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- G. Coordinate completion and clean-up of work of separate sections.
- H. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.
- G. Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- H. Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of the Contractor, submit an RFI (request for interpretation) to Architect.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section, including but not limited to:
 - 1. Project Coordinator.
 - 2. Person installing the work or an on-site foreman responsible for the person installing the work.
 - 3. Manufacturers

- 4. Fabricators
- 5. Product Representatives
- C. Notify Owner four days in advance of meeting date.
- D. Prepare agenda and preside at meeting to review the following:
 - 1. Conditions of examination, preparation and installation procedures.
 - 2. Coordination with related work.
 - 3. The Contract Documents.
 - 4. Options.
 - 5. Related Change Orders.
 - 6. Purchases.
 - 7. Deliveries.
 - 8. Submittals.
 - 9. Mockups.
 - 10. Compatibility problems.
 - 11. Time schedules.
 - 12. Weather limitations.
 - 13. Manufacturer's written recommendations.
 - 14. Warranty requirements.
 - 15. Compatibility of materials.
 - 16. Acceptability of substrates.
 - 17. Temporary facilities and controls.
 - 18. Space and access limitations.
 - 19. Regulations of authorities having jurisdiction.
 - 20. Testing and inspecting requirements.
 - 21. Installation procedures.
 - 22. Required performance results.
- E. Record minutes and distribute copies within two days after meeting to participants, with electronic copies to Owner, participants, and those affected by decisions made.

3.04 LAYING OUT THE WORK

- A. Verify locations of survey control points prior to starting work.
- B. Promptly notify Owner of any discrepancies discovered.
- C. Contractor shall locate and protect survey control and reference points.
- D. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- E. Promptly report to Owner the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- F. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect and Owner.
- G. Utilize recognized engineering survey practices.
- H. Establish a minimum of two permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on project record documents.
- I. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
 - 1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
 - 2. Grid or axis for structures.
 - 3. Building foundation, column locations, ground floor elevations.
- J. Periodically verify layouts by same means.
- K. Maintain a complete and accurate log of control and survey work as it progresses.

- L. On completion of foundation walls and major site improvements, prepare a certified survey illustrating dimensions, locations, angles, and elevations of construction and site work.

3.05 GENERAL INSTALLATION REQUIREMENTS

- A. In addition to compliance with regulatory requirements, conduct construction operations in compliance with NFPA 241, including applicable recommendations in Appendix A.
- B. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- C. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- D. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- E. Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Owner.
 - 2. Allow for building movement, including thermal expansion and contraction.
- F. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- G. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- H. Make neat transitions between different surfaces, maintaining texture and appearance.
- I. Use products, cleaners, and installation materials that are not considered hazardous.

3.06 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 - 1. Verify that construction and utility arrangements are as indicated.
 - 2. Report discrepancies to Owner before disturbing existing installation.
 - 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.
 - 1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000 .
- C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
 - 1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
 - 2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.
- D. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
 - 2. Remove items indicated on drawings.
 - 3. Relocate items indicated on drawings.
 - 4. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
 - 5. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, Telecommunications, and _____): Remove, relocate, and extend existing systems to

accommodate new construction.

1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
 2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
 3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 - a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
 - b. Provide temporary connections as required to maintain existing systems in service.
 4. Verify that abandoned services serve only abandoned facilities.
 5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.
- F. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 3. Repair adjacent construction and finishes damaged during removal work.
- G. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
1. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Owner.
 2. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
 3. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Owner review and request instructions.
- H. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- I. Refinish existing surfaces as indicated:
1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
 2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
- J. Clean existing systems and equipment.
- K. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- L. Do not begin new construction in alterations areas before demolition is complete.
- M. Comply with all other applicable requirements of this section.

3.07 CUTTING AND PATCHING

- A. Cutting and Patching: includes cutting into existing construction to provide for the installation or performance of other work and subsequent fitting and patching required for restoring surfaces to their original condition. Cutting and Patching is performed for coordination of the Work, to uncover work for access or inspection, to obtain samples for testing, to permit alterations to be performed or for other similar purposes. Each Contractor shall be responsible for executing their own cutting and patching necessary for the installation of their work.

- B. Whenever possible, execute the work by methods that avoid cutting or patching.
- C. Provide temporary support of Work to be cut.
- D. See Alterations article above for additional requirements.
- E. Perform whatever cutting and patching is necessary to:
 - 1. Complete the work.
 - 2. Fit products together to integrate with other work.
 - 3. Provide openings for penetration of mechanical, electrical, and other services.
 - 4. Match work that has been cut to adjacent work.
 - 5. Repair areas adjacent to cuts to required condition.
 - 6. Repair new work damaged by subsequent work.
 - 7. Remove samples of installed work for testing when requested.
 - 8. Remove and replace defective and non-complying work.
- F. Examine the surfaces to be cut and patched and the conditions under which the work is to be performed. If unsafe or otherwise unsatisfactory conditions are encountered, take corrective action before proceeding with the Work.
- G. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- H. Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- I. Cut rigid materials using hand or small power tools such as a masonry saw or core drill. Pneumatic tools not allowed without prior approval.
 - 1. Cut through concrete and masonry using a cutting machine to ensure a neat hole. Cut holes and slots neatly to size required with minimum disturbance to adjacent work. Avoid marring existing finished surfaces. Temporarily cover openings when not in use.
- J. Restore work with new products in accordance with requirements of Contract Documents.
- K. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- L. Requirements for Structural Work: Do not cut and patch structural work in a manner that would result in a reduction of load-carrying capacity or of load-deflection ratio.
- M. Operational and Safety Limitations: Do not cut and patch operational elements or safety related components in a manner that would result in a reduction of their capacity to perform in the manner intended, increased maintenance, decreased operational life, or decreased safety.
- N. Visual Requirements: Do not cut and patch work in a manner that would, in the Owner's opinion, result in lessening the building's aesthetic qualities or in substantial visual evidence of cut and patch work. Remove and replace work judged by the Owner to be cut and patched in a visually unsatisfactory manner. If possible retain the original installer or fabricator, or another recognized experienced and specialized firm to cut and patch the work
- O. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400, to full thickness of the penetrated element.
 - 1. Do not cut and patch rated assemblies where possible. When cutting is required, patch in a manner approved by the Building Official to maintain the integrity and rating of the assembly.
- P. Patching:
 - 1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 - 2. Patch with seams that are durable and invisible.
 - 3. Match color, texture, and appearance.
 - 4. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair

- substrate prior to repairing finish.
5. Patch components of the exterior building enclosure in a manner that restores enclosure to a weathertight condition.

3.08 PROGRESS CLEANING

- A. Comply with safety standards and governing regulations for cleaning operations.
- B. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- C. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed, concealed, or remote spaces, prior to enclosing the space.
- D. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- E. Collect and remove waste materials, debris, and trash/rubbish from site daily and dispose off-site; do not burn or bury.

3.09 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage until Substantial Completion.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.
- G. Comply with manufacturer's written instructions for temperature and relative humidity limits of installed materials.

3.10 SYSTEM STARTUP

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- D. Verify that wiring and support components for equipment are complete and tested.
- E. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
- F. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- G. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.11 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.12 FINAL CLEANING

- A. Special cleaning requirements for specific units of Work are included in the appropriate sections of Division 02-14. General Cleaning during the regular progress of the Work is required by the General Conditions. Comply with safety standards and governing regulations for cleaning operations.
- B. Execute final cleaning prior to Substantial Completion inspection for certification for entire Project or for a portion of Project.

1. Clean areas to be occupied by Owner prior to final completion before Owner occupancy.
- C. Employ experienced workers or professional cleaners for final cleaning. Comply with the manufacturer's instruction for operations. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program.
- D. Use cleaning materials that are nonhazardous and that comply with manufacturer's written instructions for each installed product.
- E. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces including hardware. Restore reflective surfaces to their original reflective condition.
- F. Clean exterior and interior hard-surfaced finishes free of dust, stains, films and other substances.
- G. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
- H. Sweep concrete floors broom-clean in unoccupied spaces, mechanical rooms and other unfinished spaces.
- I. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- J. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned. Remove excess lubrication and other substances.
- K. Replace disposable air filters, and clean permanent air filters of operating equipment. Clean ductwork.
- L. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, drainage systems, and other limited access areas.
- M. Clean site; sweep paved areas, rake clean landscaped surfaces.
- N. Remove waste, surplus materials, trash/rubbish, machinery, tools, and construction facilities from the site; dispose of in legal manner; do not burn or bury. Do not discharge volatile or other harmful or dangerous materials into drainage systems.
- O. 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.
- P. At resilient flooring provide floor finish as required by the relative specification.

3.13 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
 1. Include occupancy permits, operating certificates, and similar releases.
 2. Provide copies to Owner.
- B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.
- C. Substantial Completion:
 1. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following:
 - a. Occupancy permits and similar approvals or certifications by governing authorities and franchised services, assuring Owner's full access and use of completed work.
 - b. Conduct a punch list review of the work and prepare a list of items that remain to be completed and corrected (Contractors punch list), the value of items on the list, and reasons why the Work is not complete. This list will be used by the Architect to confirm completion of the work.
 - c. Begin preparation of Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.

- d. Advise Owner of pending insurance changeover requirements.
 - e. Advise Owner of changeover in heat and other utilities.
 - f. Begin preparation of Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, warranties, workmanship bonds, maintenance service agreements, final certifications, and similar final record information. All warranties shall start on the date of Substantial Completion.
 - g. Complete startup testing of systems, and instruction of the Owner's operating and maintenance personnel
 - h. Terminate and remove temporary facilities, protection devices, and services from Project site, along with surplus materials, waste, mockups, construction tools, and similar elements.
 - i. Submit test/adjust/balance records, maintenance instructions, start-up performance reports, and other changeover information related to Owner's occupancy, use, operation, and maintenance.
 - j. Application for reduction (if any) of retainage, and consent of surety.
 - k. Complete final cleaning requirements, including touchup painting.
 - l. Touch-up and otherwise repair and restore marred exposed finishes.
2. Notify Architect and Owner in writing when work is complete and ready for Architect's Substantial Completion review. Include a copy of the Contractors punch list noted above.
 - a. On receipt of request, Architect will either proceed with review or notify Contractor of unfulfilled requirements.
 - b. If the Architect proceeds with the review, the Owner will also inspect the Work.
 - c. The Contractor shall inspect all building areas for similar deficiencies or conditions noted by the Architect for compliance with the contract.
 - d. Results of completed review will form the basis of requirements for Final Completion.
 3. All primary building systems shall be essentially complete.
 4. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
 6. Submit Closeout Documents for review by Owner.
 7. Deliver tools, spare parts, extra stock of materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
 8. Architect will prepare the Certificate of Substantial Completion after review or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
 - a. The Certificate of Substantial Completion may include attached documents such as a "punch list" for final acceptance, requirements of work that are incomplete and of obligations that have not been fulfilled but are required for final acceptance. Failure to include items on such lists does not alter the responsibility of the Contractor to complete all work in accordance with the contract documents
- D. Final Completion:
1. Preliminary Procedures: Before requesting final review for determining date of Final Completion, complete the following:
 - a. Submit a final Application for Payment.
 - 1) Submit with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 - 2) Submit with a statement showing an accounting of changes to the Contract Sum
 - b. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (Architect's punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance by the Contractor.
 - c. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

- d. Submit final meter reading for utilities and similar data either as of the date of substantial completion or else when the Owner took possession of and responsibility for corresponding elements of the Work.
 - e. Submit assurance, satisfactory to Owner that unsettled claims will be settled and that work not actually completed and accepted will be completed without undue delay.
 - f. Submit proof, satisfactory to Owner, that taxes, fees and similar obligations of Contractor have been paid. (AIA document G706 and 706A).
 - g. Submit lien waivers from Contractor, Subcontractors and material suppliers in the full amount of the contract.
 - h. Submit itemized list of quantities of extra materials and location in the building where they are stored.
 - i. Contractor shall satisfy requirements for site area restoration, street maintenance and repair.
 - j. Submit written confirmation that all corrected closeout documents have been transmitted to the owner including as-built record documents.
2. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Final Completion inspection.
- a. On receipt of request, Architect will either proceed with review or notify Contractor of unfulfilled requirements.
3. Upon completion of the final inspection the Architect will prepare a Final Review Memo noting if all items on the Contractor's Correction Punch List have been completed, which items remain to be completed and list any additional items found during the inspection that must be completed.
- a. Submit certified copy of the Architect's Final Review Memo signed by the Contractor and the Owner stating that each item has been completed or otherwise resolved.

3.14 MAINTENANCE

- A. Provide service and maintenance of components indicated in specification sections.
- B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.

END OF SECTION

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SECTION 01 7419
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.01 PROJECT GOALS

- A. Reduce construction waste materials as follows:
 - 1. Divert 75% of non-hazardous construction debris from the landfill.

1.02 SECTION INCLUDES

- A. This Section includes required recycling and recovery of the following waste materials and applies to listed waste materials produced during the Work:
 - 1. Concrete and Masonry: Clean concrete, brick, rock and masonry.
 - 2. Metals: Metal scrap including iron, steel, copper, brass and aluminum.
 - 3. Untreated Wood: Unpainted, untreated dimensional lumber, timber beams, engineered wood products, plywood, oriented strand board, Masonite, particleboard, wood shipping pallets and crates.
 - 4. Gypsum Wallboard Scrap: Excess drywall construction materials including cuttings, other scrap and excess materials if local market is available.
 - 5. Paper and Cardboard: Discarded office refuse including unwanted files, correspondence, etc. Clean, corrugated cardboard used for packaging, etc.
- B. Non-Recyclable Waste: Collect and segregate non-recyclable waste for delivery to a permitted landfill site.
 - 1. Mixed, Solid Waste: Solid waste commonly collected as a municipal service, exclusive of waste materials listed above.

1.03 RELATED SECTIONS

- A. Section 01 8113- Sustainable Design Requirements.
- B. All Sections as related to work.

1.04 DEFINITIONS

- A. Recovery: Any process that reclaims materials, substances, energy, or other products contained within or derived from waste on-site. It includes waste-to-energy, composting and other processes.
- B. Recycling: The process of collecting and preparing recyclable materials and reusing them in their original form or in manufacturing processes that do not cause the destruction of recyclable materials in a manner that precludes further use.
- C. Waste Materials: Large and small pieces of listed materials which are excess to contract requirements and generally include materials to be recycled and/or recovered from existing construction and items of trimmings, cuttings and damaged goods resulting from new installations, which cannot be effectively used in the Work.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Construction Waste Management Plan:
 - 1. Before start of construction, develop a construction waste management plan indicating how Contractor proposes to collect, segregate, recycle and recover construction wastes and debris generated by the Work.
 - 2. Include a list of recycling facilities to which indicated recyclable materials will be sent for recycling, or name of off-site waste recycling facility where waste will be sorted and recycled as specified.
 - 3. Identify materials that are not recyclable or otherwise recoverable that must be disposed of in a landfill or other means acceptable under governing State of Minnesota and local regulations. List permitted landfills and/or other disposal means to be employed.
- C. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.

1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
2. Recycled and Salvaged Materials: Include the following information for each:
 - a. Identification of material, including those retrieved by installer for use on other projects.
 - b. The percentage of material removed from the project site and recycled.
 - c. Certification by receiving party that materials will not be disposed of in landfills or by incineration.

1.06 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with applicable requirements of the State of Minnesota and applicable local ordinances and regulations concerning management of construction, demolition, land clearing, inert, and yard trash debris and subsequent modifications and amendments to same.
- B. Disposal Sites, Recyclers, and Waste Materials Processors: Use only facilities properly permitted by the State of Minnesota and by local authorities where applicable.
- C. Implementation: Designate an on-site party responsible for instructing workers and implementing Construction Waste Management Plan. Distribute copies of Construction Waste Management Plan to job site foreman and each subcontractor. Include waste management and recycling in worker orientation. Provide on-site instruction on appropriate separation, handling, recycling and recovery methods to be used by all parties at the appropriate stages of the work at the site. Include waste management and recycling discussion in pre-fabrication meetings with subcontractors and fabricators. Also include discussion of waste management and recycling in regular job meetings and job safety meetings conducted during the course of work at the site.

1.07 STORAGE AND HANDLING

- A. Site Storage: Remove materials for recycling and recovery from the work location to approved containers or storage areas as required.
- B. Position containers for recyclable and recoverable waste materials at a designated location on the Project Site. If materials are sorted on site, provide separate collection containers or storage areas for not less than the following materials:
 1. Concrete and masonry.
 2. Metals.
 3. Untreated lumber.
 4. Gypsum wallboard scrap.
 5. Paper and cardboard.
- C. Change-out loaded containers for empty containers as demand requires.
- D. Handling: Deposit indicated recyclable, and recoverable materials in storage areas or containers in a clean (no mud, adhesives, solvents, petroleum contamination), debris-free condition. Do not deposit contaminated materials.
- E. If the contamination chemically combines with the material so that it cannot be cleaned, do not deposit into the recycle containers.
- F. Maintain records of material recycling and disposal for review by Owner.

1.08 PROJECT/SITE CONDITIONS

- A. Environmental Requirements: Transport recyclable and recoverable waste materials from the Work Area to containers and carefully deposit in the containers without excess noise and interference with other activities, to minimize noise and dust.
 1. Do not place recyclable waste materials on the ground adjacent to a container.
- B. Existing Conditions: Coordinate with "Instructions to Bidders" and "Supplementary Conditions."

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 WASTE MANAGEMENT

- A. General: Implement waste management procedures in accordance with Construction Waste Management Plan. Maintain procedure throughout the life of this Contract.
- B. Source Separation On- or Off-Site: Either separate, store, protect, and handle at the project site all identified recyclable and recoverable waste products to prevent contamination of materials and maximize recyclability and recoverability of materials or mix all identified recyclable and recoverable waste products for separation off-site.
- C. Arrange for the regular collection, transport from the site, and delivery to respective approved recycling centers of indicated recyclable waste materials.
- D. Delivery Receipts: Arrange for timely pickups from the site or deliveries to approved recycling facilities of designated waste materials to keep construction site clear and prevent contamination of materials.

3.02 RECYCLABLE WASTE MATERIALS HANDLING

- A. General: The following paragraphs supplement handling requirements for various of the materials identified for classification and recycling listed in Part 1 "Summary" article above.
 - 1. Concrete and Masonry: Free of metals, woods and other contaminants. If possible during demolition, crush existing concrete and concrete masonry units on-site into aggregate size. Store crushed material on-site in clean area to avoid contamination from other materials or building processes. Reuse on-site crushed material for fill, for stabilizing soils, or as base and sub-base materials. If crushing on site is impractical, store material during demolition processes on site in clean, uncontaminated area. Transport concrete and masonry materials to a certified concrete recycler as needed.
 - 2. Metals: Cut items to lengths and sizes to fit within the container provided when necessary. Where there is sufficient quantity of a specific recyclable waste item (for example: salvaged metal roofing or duct work), make special arrangements for items to be bundled, banded or tied, and stack in a designated location for a special pick-up.
 - 3. Untreated Wood: Salvaged wood materials to be free of metals, concrete, gypsum wallboard, insulation, and other contaminating materials. Stack dimensional wood into like piles. For example, store 2 x 4s with other 2 x 4s, and 2 x 6s with other 2 x 6s. Also, if quantity is sufficient, separate piles into lengths of 4-foot increments. Reuse lumber on site as studs, backing, blocking or other uses where appropriate. Stack non-dimensional wood in piles for possible reuse on-site or transport off-site. Depending on size of lumber, recycle or chip wood for plant mulch. If wood materials cannot be used on site, transport to a certified wood recycler or reuse center.
 - 4. Gypsum Wallboard Scrap: Separate gypsum wallboard from other wastes. Dispose of waste gypsum wallboard off-site at a gypsum reclamation or recycling facility, or on-site as a soil amendment.
 - 5. Paper and Cardboard: Classify and handle waste paper goods as follows:
 - a. Cardboard and paperboard cartons and boxes: knock-down, fold flat, and deposit in appropriate recycle container.

END OF SECTION

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**SECTION 01 7800
CLOSEOUT SUBMITTALS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Project Record Documents.
- B. Operation and Maintenance Data.
- C. Warranties and bonds.
- D. Electronic Document Submittal Service

1.02 RELATED REQUIREMENTS

- A. Section 00 7200 - General Conditions: Performance bond and labor and material payment bonds, warranty, and correction of work.
- B. Section 01 3000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- C. Section 01 7000 - Execution and Closeout Requirements: Contract closeout procedures.
- D. Individual Product Sections: Specific requirements for operation and maintenance data.
- E. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

- A. Project Record Documents: Submit documents in PDF format, to Owner with claim for final Application for Payment.
 - 1. Owner will review and return PDF file to the Contractor with comments for correction, if not complete.
 - 2. Return one PDF copy of corrected or completed documents to Owner within 10 days of receipt of comments.
- B. Operation and Maintenance Data:
 - 1. Submit one copy of preliminary draft or proposed formats and outlines of contents before start of Work. Owner will review draft and return one copy with comments.
 - 2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
 - 3. For other equipment or component parts of equipment submit one PDF copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned , with Architect comments. Revise content of all document sets as noted prior to final submission.
 - 4. Submit two sets of revised final documents in final form to Owner within 10 days after final inspection.
 - a. Include one PDF copy.
- C. Warranties and Bonds:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
 - a. Submit one PDF copy for review by Owner. Revise content of all documents as noted by Owner prior to final submission.
 - b. Submit one PDF copy and two full size hardcopies to Owner 10 days after final inspection.
 - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.
- D. Electronic Documentation
 - 1. All final PDF copies of closeout submittals shall be included on one USB Flash Drive, version 3.0 or later.

2. Arrange content in files by systems under section numbers and sequence of Table of Contents of this Project Manual.
- E. Electronic Document Submittal Service:
1. All final PDF copies of closeout submittals shall be included on archive digital media provided by this service, with each PDF file organized within its activity log layout. Contact the submittal service to provide this media.
 2. Submit two copies of the submittal services archive disc to the Owner on a USB Flash Drive, version 3.0 or later.
- F. Record Survey
1. As-built survey provided by the General Contractor properly certified by the Land Surveyor and documenting the following:
 - a. Confirm that building is within project property lines.
 - b. Confirm all easements.
 - c. Verify and note building setbacks
 - d. Building and site structure location(s).
 - e. Hard paving locations and dimensions
 - f. Parking lot and curb and gutter location and dimensions.
 - g. Planting areas.
 - h. Site lighting
 - i. Spot elevations at building corners, building entrances and exits.
 - j. Verify and note positive drainage away from the building.
 - k. Storm sewer inlet locations, rim and invert elevations.
 - l. Other information required by the Lender
 2. ALTA As-Built Survey
 - a. Certified and conforming to Lender requirements.
 - b. Include all verifications and Title Work.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

- A. General
1. Additional requirements for record documents are indicated in the individual sections of these specifications as well as in the General Conditions.
 2. Do not use record documents for construction purposes.
 3. Protect from deterioration and loss in a secure, fire-resistive location.
 4. Provide access to record documents for the Owner's reference during normal working hours.
 5. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - a. Drawings.
 - b. Specifications.
 - c. Addenda.
 - d. Change Orders and other modifications to the Contract.
 - 1) Include ASI's, PR's, and CCD's.
 - e. Reviewed shop drawings, product data, and samples.
 - f. Manufacturer's instruction for assembly, installation, and adjusting.
 6. Ensure entries are complete and accurate, enabling future reference by Owner.
 7. Store record documents separate from documents used for construction.
 8. Record information concurrent with construction progress.
- B. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
1. Product substitutions or alternates utilized.
 2. Selection of options.

3. Information on work where it is concealed or cannot otherwise be readily discerned at a later date by direct observation.
 4. Changes made by Addenda and modifications.
 5. ASI, PR, and CCD numbers for cross referencing to these bound documents.
 6. Note related record drawing information and product data, where applicable.
- C. Record Drawings and Shop Drawings: Maintain a record set of reproducible copies in a clean, undamaged condition. Legibly mark with red ink, each item to record actual construction including:
1. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 2. Field changes of dimension and detail.
 - a. Mark the drawing most capable of showing the actual "field" condition fully and accurately. Where shop drawings are used for mark-up, record a cross-reference at the corresponding location on the working drawings.
 - b. Give particular attention to concealed work that would be difficult to measure and record at a later date.
 3. Details not on original Contract drawings.
 4. Changes made by Addenda.
 5. ASI, PR, and CCD numbers for cross referencing to these bound documents.

3.02 PROJECT RECORD DOCUMENT HARDCOPY FORMAT

- A. Record Drawings: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets as follows:
1. Project name.
 2. Date.
 3. Designation: "PROJECT RECORD DRAWINGS."
 4. Name of Architect.
 5. Name of Contractor.
- B. Record Specifications:
1. Organize into binders
- C. Record Modifications
1. Organize ASI's, PR's, and CCD's into binders.
 2. Provide tab dividers, numbered sequentially, one for each document.
- D. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
1. Provide identification on binder front and edge as follows:
 - a. Project name.
 - b. Date.
 - c. Designation: "PROJECT RECORD 'TYPE'."
 - d. Name of Architect.
 - e. Name of Contractor.

3.03 OPERATION AND MAINTENANCE DATA

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
1. Mark these documents to show significant variations in the actual work performed in comparison with the submitted information. Include both variations in the products as delivered to the site and variations from the manufacturer's instructions and recommendations for installation.

2. Include concealed products and portions of the Work which cannot otherwise be readily discerned at a later date by direct observation.
 3. Note related change orders and mark-up of record drawings and specifications.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.04 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:
1. Product data, with catalog number, size, composition, and color and texture designations.
 2. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- D. Additional information as specified in individual product specification sections.
- E. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.05 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
1. Description of unit or system, and component parts.
 2. Identify function, normal operating characteristics, and limiting conditions.
 3. Include performance curves, with engineering data and tests.
 4. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
- D. Include color coded wiring diagrams as installed.
- E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- G. Provide servicing and lubrication schedule, and list of lubricants required.
- H. Include manufacturer's printed operation and maintenance instructions.
- I. Include sequence of operation by controls manufacturer.
- J. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- K. Provide control diagrams by controls manufacturer as installed.
- L. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

M. Additional Requirements: As specified in individual product specification sections.

3.06 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

- A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings. Use pocket folders for folded sheets.
- D. Cover and Spine: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.
- F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- H. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.
- I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- J. Arrangement of Contents: Organize each volume in parts as follows:
 - 1. Project Directory.
 - 2. Table of Contents, of all volumes, and of this volume.
 - 3. Operation and Maintenance Data: Arranged by system, then by product category.
 - a. Source data.
 - b. Product data, shop drawings, and other submittals.
 - c. Operation and maintenance data.
 - d. Field quality control data.
 - e. Photocopies of warranties and bonds.

3.07 WARRANTIES AND BONDS

- A. General
 - 1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 - a. Modified by Contractor to include Project-specific information and properly executed.
 - 2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.
 - a. Contractor to prepare a written document using appropriate form, fully executed.
- B. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- C. Verify that documents are in proper form, contain full information, and are notarized.
- D. Co-execute submittals when required.
- E. Retain warranties and bonds until time specified for submittal.

- F. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

END OF SECTION

SECTION 01 8113
SUSTAINABLE DESIGN REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Minimum Sustainable Performance Requirements.
 - 1. Single Family - Intended Methods Worksheet 2023 - 2024 MN Overlay to the 2020 Enterprise Green Communities Criteria.
 - a. The 2020 Enterprise Green Communities Criteria are included by reference and can be found at <https://www.greencommunitiesonline.org/>
 - b. The 2023-2024 Minnesota Overlay and Guide to the 2020 Enterprise Green Communities Criteria is included by reference and is available from the Architect.
 - c. The 2023 Minnesota Housing Single Family - Intended Methods Worksheet for this project is attached to the end of this section.

1.02 REFERENCE STANDARDS

- A. 2020 Enterprise Green Communities Criteria
- B. ASHRAE - American Society of Heating, Refrigerating & Air Conditioning Engineers
- C. Bay Area Air Quality Management District (BAAQMD)
- D. Center for Resource Solutions (CRS)
- E. ENERGY STAR New Homes, Version 3.1.
- F. Energy Star Qualified New Homes, Version 3.1 System Quality Installation Contractor Checklist https://www.energystar.gov/newhomes/homes_prog_reqs/national_page
- G. Green Seal GS-11: Green Seal Standard for Paints and Coatings.
- H. Green Seal GS-36: Green Seal Standard For Adhesives for Commercial Use.
- I. Health Product Declaration Open Standard
- J. 2023 - 2024 MN Overlay to the 2020 Enterprise Green Communities Criteria
- K. SCAQMD Rule 1113 - South Coast Air Quality Management District, VOC Limits for Paints, Coatings, and Primers.
- L. SCAQMD Rule 1168 - South Coast Air Quality Management District, VOC Limits for Adhesives, Sealants.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. The Owner will contract with a qualified professional with experience performing energy modeling or a Home Energy Rater (HERS) as required by the performance requirements.
- B. The Contractor shall coordinate with the Owners energy professional during construction to provide access to the building and building systems relative to their work and shall complete checklists provided by this professional and as required by the performance requirements.
- C. The Contractor shall correct work that fails to meet the performance requirements as determined from testing and inspections by the Owners energy professional. The cost of additional testing and inspections will be born by the Contractor.
- D. The Architect, Owner, and Contractor shall verify that the items noted in the Green Communities Intended Methods Worksheet have been completed, and having done so, sign and date the worksheet.

1.04 PERFORMANCE REQUIREMENTS (2023-2024 MN OVERLAY TO THE 2020 ENTERPRISE GREEN COMMUNITIES CRITERIA)

- A. This project is subject to the mandatory and selected optional criteria of the 2020 Enterprise Green Communities (EGC) with the MN Overlay. The full cooperation of Contractor and Subcontractors is essential to the success of the Project. Refer to the attached Intended Methods Checklist for this project to see the mandatory and selected optional criteria that has been selected for this project. All work related to the selected criteria must be incorporated into

the project.

- B. See the Minnesota Housing Single Family - Intended Methods Worksheet attached to this section and the 2020 Enterprise Green Communities Criteria, for criteria not included below.
- C. Category 5: Operating Energy
 - 1. Criteria 5.1a: Residential New Construction - Single-family attached and detached homes, multifamily buildings with four dwelling units or less and with five stories or less.
 - a. Meet ENERGYSTAR 3.1 using the prescriptive path or the performance path with energy professional.
 - b. Required Verification Documents:
 - 1) HERS Index Target Procedure.
 - 2) Rater Design Review Checklist.
 - 3) HVAC Design Report.
 - 4) HVAC Commissioning Checklist.
 - 5) Water Management System Building Requirements.
 - c. See the Minnesota Overlay for exceptions.
 - d. The Rater Field Checklist requires that a blower door test be conducted to confirm anticipated HERS rating is met. It is imperative that all insulation, vapor barrier installation, caulking/sealing installation be completed in a thorough/detailed manner to pass this blower door test. The Contractor is required to make adjustments to the construction until the home passes the required testing threshold.

1.05 SUBMITTALS

- A. See the Division 00 Sections, and the Specification Divisions 01 - 33 for specific submittal requirements related to these Sustainable Requirements.
- B. The Green Communities Intended Methods Worksheet, signed and dated at Closeout.
- C. See Section 01 3000 Administrative Requirements for submittal procedures.

PART 2 PRODUCTS (NOT USED)

2.01 CONSTRUCTION MATERIALS

- A. Composite Wood and Agrifiber Products:
 - 1. Composite wood and agrifiber products shall have no added urea-formaldehyde (NAUF) resins.
 - 2. All composite wood products must be certified as compliant with California 93120 Phase 2, or, if using a composite wood product that does not comply with California 93210, all edges and sides must be sealed with low-VOC sealants per Enterprise Green Communities Criteria 6.2.
- B. Adhesives and Sealants: Provide only products having lower volatile organic compound (VOC) content than required by SCAQMD Rule No. 1168.
- C. Installed Carpet: All carpet products must meet the Carpet and Rug Institutes Green Label or Green Label Plus certification for carpet, pad and carpet adhesives.
- D. Interior paints and primers must have VOC levels, in grams per liter, less than or equal to the thresholds established by the SCAQMD Rule No. 1113.

2.02 MISCELLANEOUS

- A. Building cavities shall be left clean and free of debris. All wall cavities shall be free of debris prior to installation of the gypsum board.
- B. All foodstuffs shall be disposed of in containers which will be removed from the job site and emptied at the end of each workday.
- C. All debris shall be removed from under and around the building premises and properly disposed of in a dumpster.
- D. The dumpster shall be removed when full on a regular basis so that piles of debris do not accumulate on the ground around it.
- E. Smoking is prohibited within or near any structure on the job site.

- F. The use of gas-generated machinery is to be minimized within or near the building after the foundation is completed.
- G. Heaters fueled by gasoline or kerosene are prohibited. If relative humidity rises above 55%, electric dehumidification should be applied until relative humidity remains consistently between 45% and 55% without additional dehumidification. Interior surface temperatures shall remain above 50 degrees. The joint compound must be completely dry before the application of primer.
- H. Provide construction ventilation with minimum 1.5 air changes per hour during the day of application and for two days afterwards:
 - 1. for paints and adhesives.
 - 2. for vinyl flooring and carpeting.
 - 3. for any other materials and products that off-gas.
- I. Keep site, ducts and mechanical equipment and wall cavities clean.
- J. Clean duct system after painting and trim is completed.
- K. The contractor shall perform and maintain the special project procedures with the same quality of workmanship as would be expected with standard materials and methods. The contractor shall maintain a quality control program that ensures full protection of work against exposure to prohibited materials and practices.
- L. It is the responsibility of the general contractor to ensure that their labor force, all subcontractors and their labor forces, all suppliers, and other visitors be made aware of these rules and follow them at all times. The following sign is to be made and prominently posted on the job site.
- M. **"This building is being constructed as a healthy building. Only specified products and procedures may be used. Alternatives to specified materials and products must be approved in writing by the owner and /or architect prior to use. If in doubt, contact the general contractor."**
- N. Spills of fuels, solvents, or chemicals must be avoided. If a spill occurs, report it to the general contractor immediately.
- O. Finish flooring materials shall not be applied over insufficiently cured concrete slabs. Quickly and thoroughly dry out precipitation that enters an unfinished structure. Wood members shall have a moisture content less than 17%. Walls shall not be enclosed until wet applied insulation systems such as cellulose or spray foams are properly cured.
- P. Provide MSDS sheets for paints and varnishing and maintain copy on site.

2.03 MATERIALS

- A. All materials are to be protected from contamination and moisture damage during storage and after installation.
- B. The contractor shall verify, prior to installation, that all materials are undamaged, uncontaminated, and free of acquired odors. Any products found to be defective shall not be used unless approved by the owner or architect.
- C. The use of substances listed below is prohibited: Herbicides, fungicides, insecticides and other pesticides, except as specified.
 - 1. Composite wood products containing urea-formaldehyde binders.
 - 2. Commercial cleaning products other than those specified.
 - 3. Adhesives, paints, sealers, stains, and other finishes except as specified.
 - 4. Any building materials or components that have been contaminated while in storage or during shipment. Contact the architect for further instructions about any application where these substances would normally be used if information for a substitution is not in this document.
- D. No products may be substituted for the specified product unless agreed upon in writing by the owner or architect. An MSDS sheet and product literature must be provided on any substitution in order for it to be considered. Submit a physical sample to the owner or architect whenever possible.

E. Commercial Cleaning Products - Green Seal has recommended industrial and institutional cleaners that meet the following criteria:

1. are not toxic to human or aquatic life.
2. contain VOC levels under 10% by weight when diluted for use.
3. are readily biodegradable.
4. are not made of petrochemical compounds or petroleum.
5. do not contain chlorine bleach.
6. are free of phosphates and derivatives.
7. do not contain phenolic compounds or glycol ethers.
8. are free of arsenic, cadmium, chromium, lead, mercury, nickel, and selenium.
9. have acceptable pH levels.
10. work optimally at room temperature.

PART 3 EXECUTION (NOT USED)

END OF SECTION

Project Name: 413 Franklin Avenue NW
 Location (City): Watertown, MN
 Developer/Borrower/ Administrator/ Subrecipient: Carver County CDA
 Architect of Record (optional): Andy Madson, LHB
 General Contractor: TBD
 HERS Rater/Energy Consult (Person and Entity): Michael Boerst, Hearland Energy Consultants
 This Form Prepared By (Person and Entity): Andy Madson
 Date Last Updated: *[remember to update the date with each submittal]*
 Optional Points Claimed: 0

Construction Type:	
<input checked="" type="checkbox"/> New Construction	
<input type="checkbox"/> Acquisition/ Rehab	
Rural/ Tribal/ or Small Town	
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

1. Single Family New Construction projects must include all applicable "Mandatory" Criteria. **(40)** Optional Criteria points are **encouraged, but are not required**.
2. Single Family Rehab projects must include all applicable "Mandatory" Criteria listed in Table 7.02 of the MN Overlay. **(35)** Optional Criteria points are **encouraged, but are not required**.
3. The information on this form must reference and reconcile with the **2020** version of the Enterprise Green Communities Criteria as amended with the current/applicable version of the MN Overlay.
4. For developments with scattered sites or with different dwelling unit designs, a separate Intended Methods Worksheet form must be provided for each site and each dwelling unit type.
5. **Items with text in red as such are MN Overlay Criteria items.**
6. The "How Will Criteria Be Implemented?....." column must be completed for all Mandatory and selected Optional Criteria points. Provide a detailed description.
7. This document is formatted to be printed in a portrait (vertical) letter (11"x 8.5") page format.
8. Key to Column Headers: C# = Criteria Number; M/O = Mandatory Criteria or Optional Criteria Points; N/A = Not Applicable; WR = Waiver Request; OP = Selected Optional Points
9. *[Text in italicized blue as such is "help text" to aid with the completion of this form]*

Col. A	Col. B	Column C	Column D	Column E	Column F				
C#	M/O	Criteria Title	Criteria Description <i>[Summary, see full Criteria for complete description]</i>	How Will Criteria Be Implemented? And, where in the plans, specifications, or other place will compliance be documented?	Intent to Comply				
					Yes	No	N/A	WR	OP

1. Integrative Design Category

1.1	0	Integrative Design: Project Priorities Survey (Optional, no points) MN OVERLAY CRITERIA	Complete and submit a Project Priorities Survey. This writable PDF document may be downloaded from the Enterprise Green Communities Criteria website or at the Minnesota Housing Building Standards website: http://www.mnhousing.gov/sites/multifamily/buildingstandards	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
1.2	M	Integrative Design: Charrettes and Coordination Meetings (Mandatory)	Develop an integrative design process that works best for your project team and intentions.	<i>The design team consists of licensed professionals including civil engineer, landscape architect, structural engineer and architect. This team had a kick-off meeting and numerous coordination meetings to discuss project goals throughout the design process.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.3	M	Integrative Design: Documentation (Mandatory)	Include in the construction/ contract documents for the project all information needed to properly implement the measures intended to meet the MN Overlay and Enterprise Green Communities Criteria.	<i>The documents (drawings and specifications) include the specifics to ensure that all mandatory and optional points are included throughout the course of construction</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.4	0	Integrative Design: Construction Management (Optional, no points) MN OVERLAY CRITERIA	Conduct a pre-construction meeting with the following agenda: 1. Clear statement of Minnesota Housing's Sustainability Policy. 2. Discuss Mandatory and Optional criteria for project. 3. Discuss Building Performance requirements. 4. Discuss air sealing requirements. 5. Discuss schedule for training, education, field mock-ups, inspections, etc. Provide meeting minutes.	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
1.5	12 or 15	Resident Health and Wellbeing: Health Action Plan	Follow the Health Action Plan process. Steps 1 through 6 = [12 points], + Step 7 = [3 Points]. Total [15] Points for all steps. Requirements: 1. Commit to embedding health into the project life cycle. 2. Partner with a public health professional. 3. Collect and analyze community health data. 4. Engage with community stakeholders to prioritize health data strategies. 5. Identify strategies to address those health issues. 6. Create an implementation plan. 7. Create a monitoring plan.	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
1.6	10	Resilient Communities: Multi-Hazard Risk/ Vulnerability Assessment	Conduct a four-part assessment (social, physical, functional, strategy) to identify critical risk factors of your property and implement at least two sets of strategies to enable the project to adapt to, and mitigate, climate-related or seismic risks [10 points].	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0

Col. A	Col. B	Column C	Column D	Column E	Column D				
C#	M/O	Criteria Title	Criteria Description <i>[Summary, see full Criteria for complete description]</i>	How Will Criteria Be Implemented? And, where in the plans, specifications, or other place will compliance be documented?	Intent to Comply				
					Yes	No	N/A	WR	OP
1.7	8	Resilient Communities: Strengthening Cultural Resilience	Strengthen cultural resilience through one of the following options: <u>Option 1:</u> Complete a Cultural Resilience Assessment [8 points], or <u>Option 2:</u> Convene a Cultural Advisory Group [8 points]	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
Subtotal Category 1 Selected Optional Points									0

Col. A	Col. B	Column C	Column D	Column E	Column D				
C#	M/O	Criteria Title	Criteria Description <i>[Summary, see full Criteria for complete description]</i>	How Will Criteria Be Implemented? And, where in the plans, specifications, or other place will compliance be documented?	Intent to Comply				
					Yes	No	N/A	WR	OP

2. Location + Neighborhood Fabric Category

2.1	M	Sensitive Site Selection (Mandatory)	All Projects must: 1. Protect floodplain functions. 2. Conserve and protect aquatic ecosystems. 3. Protect ecosystem function. 4. Conserve the most productive agricultural soils.	<i>The project site is not located in a flood plain. The project does not contain nor is it located in close proximity to aquatic ecosystems. 1/C101 and sheet L500 identifies locations where tree preservation fencing is to be installed and the associated details for temporary fencing and tree root protection. The construction limits for the project are limited as much as possible to just the extents of the</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.2	0	Connections to Existing Development and Infrastructure (Optional, no points) MN OVERLY CRITERIA	1. Locate the project on a site that is within or contiguous to existing development. 2. Connect the project to the existing pedestrian network. 3. For sites over five acres, provide connections to the adjacent street network at least 800 linear feet along the perimeter. 4. Tie all planned bike paths/ lanes to your site to existing bike paths or lanes that intersect your site.	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
2.3	M	Compact Development (Mandatory for NC) MN OVERLAY CRITERIA	Each single family project must be built to, at a minimum, the lesser of the residential density (dwelling units/ acre) of the census block group in which the project is located, or the density disclosed in the Impact Fund Administrator's Application for Funds. If no density is disclosed in the Impact Fund Administrator's Application for Funds, then each SF project must be built, at a minimum, to the residential density (dwelling units/acre) of the census block group in which the project is located. To find the density of the census block group, type the project address into the Center for Neighborhood Technology "Residential Density of a Location" calculator found at http://apps.cnt.org/residential-density . Single family projects in Rural/Tribal/Small Towns that do not have zoning requirements, must be built to, at a minimum, the lesser of five units per acre or the density disclosed in the Impact Fund Administrator's Application for Funds. If no density is disclosed in the Impact Fund Administrator's Application for Funds, then each SF project must be built to, at a minimum, five units per acre.	<i>Watertown, MN meets the criteria of a rural/tribal/small town per the Arcgis database. Watertown does have zoning requirements. Site Area - 0.23 acres, 1unit/0.23 = 4.35units/acre. This density is less than the 2.5units/acre of the census block group that makes up Watertown, MN</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.4	5 or 7	Increased Compact Development	Exceed the residential density (dwelling units/acre) of the census block group in which your project is located. Exceed by 2x for [5 points], or Exceed by 3x for [7 points]	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
2.5	0	Proximity to Services (Optional, no points) MN OVERLAY CRITERIA	Locate the project within a 0.5-mile walk distance of at least four, or a 1-mile walk distance of at least seven, of the listed services. For projects that qualify as Rural/Tribal/Small Town, locate the project within 5 miles of at least four of the listed services. Each "service" type may not be counted more than twice.	<i>[Clearly explain how the project will meet all applicable Mandatory requirements]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
2.6	0	Preservation of and Access to Open Space for Rural/Tribal/Small Towns (Optional, no points) MN OVERLAY CRITERIA	<u>Option 1:</u> Locate the project within a 0.25 mile walk distance of dedicated, public open space that is a minimum of 0.75 acres and is open and accessible to all residents. A minimum of 80% of the public open space must be non-paved. <u>Option 2:</u> Set aside a minimum of 10% (minimum of 0.25 acre) of the total acreage as permanent open space that is open and accessible to all residents. A minimum of 80% of the open space must be non-paved.	<i>[Clearly explain how the project will meet all applicable Mandatory requirements]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
2.7	2, 4, or 6	Preservation of and Access to Open Space	<u>Option 1:</u> Locate the project within a 0.25-mile walk distance of dedicated, accessible public open space that is a minimum of 0.75 acres. A minimum of 80% must be non-paved [4 points]. <u>Option 2:</u> Set aside a percentage of non-paved open space for use by all residents: 25% [2 points]; 35% [4 points]; or 45% + written statement of preservation/conservation policy for set-aside land [6 points]	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0

Col. A	Col. B	Column C	Column D	Column E	Column D				
C#	M/O	Criteria Title	Criteria Description <i>[Summary, see full Criteria for complete description]</i>	How Will Criteria Be Implemented? And, where in the plans, specifications, or other place will compliance be documented?	Intent to Comply				
					Yes	No	N/A	WR	OP
2.8	2, 6, or 8	Access to Public Transportation MN OVERLAY CRITERIA	NC not in Rural/Tribal/Small Town Locations [2 points] Rehab Projects not in Rural/Tribal/Small Town Locations [2, 6, or 8 points] NC and Rehab Projects in Rural/Tribal/Small Town Locations [6 points]	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
2.9	2, 6 or 8	Improving Connectivity to the Community: Incentivize Biking Mobility	Improve access to community amenities through measures indicated in the MN Overlay.	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
2.10	5 max	Passive Solar Heating/Cooling	Design and build with passive solar design, orientation and shading that meet specified guidelines in the MN Overlay based upon construction type, orientation, glazing and shading.	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
2.11	6	Adaptive Reuse of Buildings	Rehabilitate and adapt an existing structure that was not previously used as housing. Design the project to adapt, renovate, or reuse at least 50% of the existing structure and envelope (includes exterior skin and framing and excludes window assemblies and non-structural roofing).	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
2.12	6	Access to Fresh, Local Foods	Option 1: Neighborhood Farms and Gardens [6 points] Option 2: Community-Supported Agriculture [6 points] Option 3: Proximity to Farmers Market [6 points]	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
2.13	8	Advanced Certifications: Site Planning, Design and Management	Locate building(s) within a community that is certified in one of the following programs: LEED for Neighborhood Development [8 points], or LEED for Cities and Communities [8 points], or Living Community Challenge [8 points], or SITES [8 points]	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
2.14	6 max	Local Economic Development and Community Wealth Creation	Option 1: Local Hiring Preference [2 points] Option 2: Local Employment [3 points] Option 3: Physical Space for Business, Nonprofits and/or Skill and Workforce Education [3 points] Only two of the three options can be claimed.	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
2.15 a&b	0	Access to Broadband (Optional, no points) MN OVERLAY CRITERIA	If internet access is available, consider providing conduit or cabling within the dwelling unit from an access point to locations where a router will most likely be installed.	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0

Subtotal Category 2 Selected Optional Points **0**

Col. A	Col. B	Column C	Column D	Column E	Column D				
C#	M/O	Criteria Title	Criteria Description <i>[Summary, see full Criteria for complete description]</i>	How Will Criteria Be Implemented? And, where in the plans, specifications, or other place will compliance be documented?	Intent to Comply				
					Yes	No	N/A	WR	OP

3. Site Improvements Category

3.1	M	Environmental Remediation (Mandatory for all projects with existing environmental conditions) MN OVERLAY CRITERIA	All single family projects must conduct a Phase I Environmental Site Assessment (ESA) if any or all of the following conditions apply: a. Sites with five or more units where there has been a change in land use from industrial, commercial, institutional or agricultural to residential; b. For New Construction, where each individual residence/DU is not connected to a city water supply; c. For Rehab, where the unit is neither connected to a city water supply or an existing active well; d. Where required as a condition of Acquisition/Purchase. Exception: Developments of five or more new units on previous residential land uses are exempt from the conducting a Phase I ESA.	<i>Phase I ESA is not required due to the following: a. Project is only one unit. b. unit is connected to city water. d. Phase 1 was not a requirement for the acquisition/purchase of the property</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.2	M	Minimization of Disturbance during Staging and Construction (Mandatory)	Sites > acre: Implement EPA's Best Management Practices for Construction Site Stormwater Runoff Control, or local requirements, whichever is more stringent. Sites <= 1 acre: Stockpile Topsoil; Runoff Control; Protect Storm line flow; Divert Surface Water; Tree Protection; Slope Stabilization.	<i>The demolition and erosion control plan included in the set provides erosion control measures that meet the state permit requirements. The construction limits were set up to disturb the minimum amount of area possible based on the proposed conditions and necessary grading. Tree protection has been shown and additional details for trimming and treating of effected trees is included in the landscape plans.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.3	M	Ecosystem Services/ Landscape (Mandatory, if providing landscaping/ landscaping in scope of work)	If providing plantings, all should be native or climate-appropriate (adapted) to the region. All new plantings must be appropriate to the site's soil and microclimate. Do not introduce any invasive plant species. All disturbed areas should be planted, seeded, or xeriscaped.	<i>Plantings are a combination of native species and climate-appropriate non-native shrubs and perennials. Plant selections were based on existing site conditions, taking into consideration sun exposure and shade tolerance, as well as location relative to proposed structures. While some species are non-native, they are not considered invasive species. Areas disturbed on site either</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.4	M	Surface Stormwater Management (Mandatory for all projects) MN OVERLAY CRITERIA	Surface Stormwater Management must be per local/ regional watershed district requirements or other municipality ordinances/ requirements. If there are no such requirements, follow the criteria requirements.	<i>The site is designed to meet the requirements of the Minnesota Stormwater construction permit. Based on the size of the project permanent stormwater management is not required, but the site is designed to meet the erosion control standards set by the permit.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.5	10 max	Surface Stormwater Management	Retain precipitation volume for the following percentile precipitation events: 70th Percentile Precipitation Event [6 points] 80th Percentile Precipitation Event [8 points] 90th Percentile Precipitation Event [10 points]	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
3.6	M	Efficient Irrigation and Water Reuse (Mandatory, if permanent irrigation is utilized)	Install an efficient irrigation system with the following: Compliance with local water restrictions. Design irrigations zones. Establish irrigation volume and frequency per zone. Select emission devices that will facilitate long-term reliability and serviceability. Install time/ controller to minimize evaporative losses. Install soil moisture sensor controllers.	<i>No permanent irrigation will be utilized on site</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.7	4 or 6	Efficient Irrigation and Water Reuse	<u>Option 1:</u> WaterSense labeled weather-based irrigation controller [4 points] <u>Option 2:</u> A minimum 50% of site's irrigation should reuse water [2 points]	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0

Subtotal Category 3 Selected Optional Points **0**

Col. A	Col. B	Column C	Column D	Column E	Column D
C#	M/O	Criteria Title	Criteria Description <i>[Summary, see full Criteria for complete description]</i>	How Will Criteria Be Implemented? And, where in the plans, specifications, or other place will compliance be documented?	Intent to Comply
					Yes No N/A WR OP

4. Water Category

4.1	M or 5 Max	Water-Conserving Fixtures (Mandatory for NC and Sub/Gut Rehab) (Optional/5 points for Mod Rehab) MN OVERLAY CRITERIA	<u>Performance Option:</u> 20% Reduction per Criteria. <u>Prescriptive Option:</u> Install water-conserving fixtures in all units and any common facilities with the following specifications: Toilets: WaterSense-labeled and 1.28 gpf; Urinals: WaterSense-labeled and 0.5 gpf; Showerheads: WaterSense-labeled and 2.0 gpm; Kitchen faucets: 2.0 gpm; Lav faucets: WaterSense-labeled and 1.5 gpm <u>Optional Mod Rehab points (prescriptive):</u> All Toilets [1 point]; All Urinals [1 point]; All Showerheads [1 point]; All Kitchen Faucets [1 point]; and/or All Lavatory Faucets [1 point].	<i>Kitchen Faucet is specified to include a 2.0gpm flowrate. Shower head is specified to be Watersense-labeled and 2.0gpm. Water closet is specified to be Watersense-labeled and 1.28gpf. Lav faucet is specified to be Watersense-labeled and 1.5gpm.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.2	6 Max	Advanced Water Conservation	Reduce water consumption by % per Criteria: 30% = 3 points 40% = 4 points 50% = 5 points 60% = 6 points	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.3	M or 5 Max	Water Quality (Mandatory for Substantial and Gut Rehab built before 1986 only) (Optional/ 5 points for Mod Rehab) MN OVERLAY CRITERIA	Test water from dwelling unit faucets for water quality and remediate as indicated in the MN Overlay.	<i>[Clearly explain how the project will meet all applicable Mandatory and selected optional requirements]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
4.4	4	Monitoring Water Consumption and Leaks	Conduct pressure-loss tests and visual inspections to determine if there are any leaks; fix any leaks found. And install a water monitoring and leak detection system.	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.5	4	Efficient Plumbing Layout and Design	To minimize water loss from delivering hot water, the hot water delivery system shall store no more than 0.5 gallons of water in any piping/ manifold between the fixture and the water heating source of recirculation line.	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.6	6 Max	Non-Potable Water Reuse	Harvest, treat, and reuse rainwater and/or greywater to meet a portion of the project's total water needs: 10% reuse [3 points] 30% reuse [5 points] 40% reuse [6 points]	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.7	Omit	Access to Potable Water during Emergencies MN OVERLAY CRITERIA	Not allowed if the project receives funding from Minnesota Housing.						

Subtotal Category 4 Selected Optional Points	0
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Col. A	Col. B	Column C	Column D	Column E	Column D				
C#	M/O	Criteria Title	Criteria Description <i>[Summary, see full Criteria for complete description]</i>	How Will Criteria Be Implemented? And, where in the plans, specifications, or other place will compliance be documented?	Intent to Comply				
					Yes	No	N/A	WR	OP
5. Operating Energy Category									
5.1a	M	Building Performance Standard (Mandatory for New Construction) MN OVERLAY CRITERIA	Certify all buildings with residential units in the project through the ENERGY STAR Residential New Construction Program using ENERGY STAR Multifamily New Construction (MFNC), ENERGY STAR Manufactured Homes, and/ or ENERGY STAR Certified Homes as relevant. Comply with one of the following paths: 1. Energy Rating Index (ERI) Path 2. ASHRAE Path 3. Prescriptive Path Provide projected operating (EUI) of the project in kBtu/ ft2/ year and kBtu/ bedroom/ year as well as projected operating building emissions intensity for the project in tCO2e/ ft2/ year and tCO2e/ bedroom/ year.	<i>Project will be designed to comply with Energy Star for Homes v3.1 certification. The owner has contracted with Heartland Energy Consultants as the HERS rater on the project that will show conformance and facilitate the certification process.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.1b	M	Building Performance Standard (Mandatory for Acquisition/ Substantial Rehab and Acquisition/ Moderate Rehab) MN OVERLAY CRITERIA	Provide an Energy Efficiency Improvement Plan per the MN Overlay.	<i>[Clearly explain how the project will meet all applicable Mandatory requirements]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
5.2a	5-12	Moving to Zero Energy: Additional Reductions in Energy Use	Energy Rating Index (ERI) Pathway: HERS score of at least five lower than required [5 points]; and each additional two-point decrease in HERS score [1 point]. Max total of [7 points] Combined total max [12 points] ASHRAE Pathway: 5% greater efficiency than required [5 points], and each additional 1% greater efficiency [1 point]. Max total of [7 points] Combined total max [12 points]	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
5.2b	15 Max	Moving to Zero Energy: Near Zero Certification	Certify the project in a program that requires advanced levels of building performance per one of the following programs listed in the MN Overlay: DOE ZERH Certification [12 points], or PHI Classic or PHIUS Certification [15 points].	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
5.3a	3	Moving to Zero Energy: Photovoltaic/ Solar Hot Water Read	Orient, design, engineer, wire, and/or plumb the development through one of the following options to accommodate installation of a PV or solar hot water system in the future. <u>Option 1:</u> PV Ready [3 points] <u>Option 2:</u> Solar Hot Water Ready [3 points]	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
5.3b	8 Max	Moving to Zero Energy: Renewable Energy	Provide renewable energy as a percentage of conception per one of the following options: <u>Option 1:</u> Percentage of Total Project Energy Consumption Provided by Renewable Energy. 10% - 70% [4 points - 8 points per Criteria Chart] <u>Option 2:</u> Percentage of Common Area Meter Energy Consumption Provided by Renewable Energy. 60% - 100% [1 point - 5 points per Criteria Chart]	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
5.4	24	Achieving Zero Energy	<u>Option 1:</u> Certify each building in the project to DOE ZERH program and install renewables and/ or procure renewable energy, which will in sum produce as much, or more, energy in a given year than the project is modeled to consume. <u>Option 2:</u> Certify each building in the project in a program that requires Zero Energy performance such as PHIUS+ Source Zero, PHI Premium, International Living Future Institute's Zero Energy Petal, Zero Carbon Petal, or Living Building Certification.	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
5.5a	5 Max	Moving to Zero Carbon: All-Electric Ready	Adequate electric service and designed and wired to allow for a seamless switch to electricity as a fuel source: Space Heating [1 point] Space Cooling [1 point] Water Heating [1 point] Clothes Dryers [1 point] Equipment for Cooking [1 point]	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0

Col. A	Col. B	Column C	Column D	Column E	Column D					
C#	M/O	Criteria Title	Criteria Description <i>[Summary, see full Criteria for complete description]</i>	How Will Criteria Be Implemented? And, where in the plans, specifications, or other place will compliance be documented?	Intent to Comply					
					Yes	No	N/A	WR	OP	
5.5b	15	Moving to Zero Carbon: All Electric	Apart from emergency backup power, no combustion equipment used as part of the building project; the project is all-electric.	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		0
5.6	M	Sizing of Heating and Cooling Equipment (Mandatory for NC all Rehabs that include replacement for heating and cooling equipment)	Size and select heating and cooling equipment in accordance with the Air Conditioning Contractors of America (ACCA) Manuals J and S or in accordance with the most recent ASHRAE Handbook of Fundamentals available at time of specification.	<i>Proper sizing of heating and cooling equipment shall be ensured</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5.7	M	Energy Star Appliances (Mandatory for NC and all Rehabs that include new appliances)	If providing appliances, install Energy Star clothes washers, dishwashers, and refrigerators. If appliances will not be installed or replaced at this time, specify that, at the time of installation or replacement, Energy Star models must be used via Criterion 8.1 and Criterion 8.4.	<i>All appliances shall be EnergyStar Rated whenever available</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5.8	M	Lighting (Mandatory for NC, and applicable Rehab/ Adaptive Reuse projects)	Provide lighting, fixtures, occupancy sensors, lighting power density, motion sensors, etc. per the Criteria.	<i>High efficiency lighting controls shall be employed</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5.9	8	Resilient Energy Systems: Floodproofing	Conduct floodproofing, including perimeter floodproofing (barriers/ shields), or lower floors. Design and install building systems in such a way that, in case of an emergency, the operation of these systems will not be grossly affected: 1. Locate any and all central space and water heater equipment above design flood elevations. 2. Locate the service disconnect at a readily accessible location above the design flood elevation. 3. Locate at least one exit door above the design flood elevation; and on plans sets, identify water entry points at basements and foundation walls and demarcate all penetrations, wall assemblies, and doors/ openings to ensure that future renovations do not compromise the integrity of floodproof construction.	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		0
5.10	8	Resilient Energy Systems: Critical Loads	Provide adequate emergency power to serve certain systems in the project. Size the system to satisfy at least three of the most critical following energy loads of the project for at least four consecutive days, 24 hours per day. Consider a larger system if needed to satisfy extended power outages and/ or to hold all occupants and staff on an emergency basis for a power outage during extreme heat or cold. <u>Option 1:</u> Islandable PV System [8 points] , Or <u>Option 2:</u> Efficient Generator [8 points]	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		0

Subtotal Category 5 Selected Optional Points **0**

Col. A	Col. B	Column C	Column D	Column E	Column D				
C#	M/O	Criteria Title	Criteria Description <i>[Summary, see full Criteria for complete description]</i>	How Will Criteria Be Implemented? And, where in the plans, specifications, or other place will compliance be documented?	Intent to Comply				
					Yes	No	N/A	WR	OP

6. Materials Category

6.1	8 Max	Ingredient Transparency for Material Health	Specify and install products that have inventories that have publicly disclosed where content is characterized and screened using health hazards lists or restricted substances lists to 1,000 ppm or better (lower is better). Refer to Criteria for optional point requirements.	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
6.2	3 Max	Recycled Content and Ingredient Transparency	Use building products that feature recycled content and disclose that recycled content. The building product must make up 75% (by weight or cost) of the product category for the project and must be composed of at least 25% post-consumer recycled content to be eligible for this criterion.	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
6.3	8 Max	Chemical Hazard Optimization	Install products that have third-party verification of optimization to 100 ppm or better.	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
6.4	M	Healthier Materials Selection (Mandatory for all) (No optional points available) MN OVERLAY CRITERIA	Use products that comply with Criteria specifications. Mandatory requirements per criteria specifications based upon Product Category: All interior paints, coatings, primers and wall paper; all interior adhesives and sealants; flooring; insulation; and composite wood. Optional points not available nor allowed.	<i>Required VOC and formaldehyde emissions are identified in each of the product specification sections in the project manual.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6.5	12 Max	Environmentally Responsible Material Selection	Use products that comply with the Optional points per Criteria based upon Product Category: Concrete, steel, insulation; roofing; paving; and wood, non-composite	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
6.6	M	Bath, Kitchen, Laundry Surfaces (Mandatory for NC and for all Rehab if in scope of work)	Use materials that have durable, cleanable surfaces throughout bathrooms, kitchens, and laundry rooms. Materials installed in these rooms should not be prone to deterioration due to moisture intrusion or encourage the growth of mold.	<i>LVT is specified for the kitchen, Seamless sheet vinyl is spec'd for the bathrooms. Concrete finish is spec'd for the laundry and mechanical rooms.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6.7	4 or 10	Regional Materials	<u>Option 1:</u> [4 points max] Use products that were extracted, processed, and manufactured within 500 miles of the project for a minimum of 90%, based on weight or on cost, of the amount of the product category installed in the project. Building product categories that can qualify for these points include the following (every two compliant products can qualify for 1 point): Framing materials; exterior materials (e.g., siding, masonry, roofing); flooring materials; concrete/ cement and aggregate materials; and/or drywall/ interior sheathing materials. NOTE: Mechanical, electrical, and plumbing components cannot be included in this calculation. <u>Option 2:</u> [10 points] Volumetric Modular Prefabrications	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
6.8	M	Managing Moisture: Foundations (Mandatory for NC and rehabs with basements or crawls spaces)	Beneath Concrete Slabs: Install poly vapor barrier over a capillary break of clean aggregate. Beneath Crawl Spaces without Slabs: Install a heavy-duty vapor barrier.	<i>In spec. section 07 2500 a 15 mil slab vapor retarder is identified for the project. Project does not include any crawlspace.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6.9	M	Managing Moisture: Roofing and Wall Systems (Mandatory for NC and rehabs with deficiencies in or scope of work including assemblies listed)	Provide water drainage away from walls, windows, and roofs by implementing the following water management techniques. Wall Systems: Weather-resistant barrier; flashing; and masonry/ stucco flashing/ weep holes. Roof Systems: Drip edge and wall/ roof intersection flashing.	<i>House design incorporates proper drainage away from foundations. A Weather resistant barrier is installed over all wood framed walls. Drip edges, valley flashing and kickout flashing are incorporated into the architectural details to ensure proper moisture management</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Col. A	Col. B	Column C	Column D	Column E	Column D				
C#	M/O	Criteria Title	Criteria Description <i>[Summary, see full Criteria for complete description]</i>	How Will Criteria Be Implemented? And, where in the plans, specifications, or other place will compliance be documented?	Intent to Comply				
					Yes	No	N/A	WR	OP
6.10	M & 6 Max	Construction Waste Management (Mandatory) (Optional points available)	Develop and implement a waste management plan that reduces non-hazardous construction and demolition waste through recycling, salvaging, or diversion strategies; maintain documentation of diversion rate for each selected strategy. Mandatory: _____ One pathway in Option 1, Two pathways in Option 2, or One pathway in Option 3. <u>Optional</u> (after meeting Mandatory): _____ Option 1: Measure by %: a. 75% [1 point]; b. 95% [1 point]. <u>Option 2:</u> Material Specific: c. Cardboard [1 point]; d. Wood [1 point]; e. Drywall [1 point]; f. Metals [1 point]; g. Concrete, brick, and asphalt [1 point]; h. Insulation, foam and plastic [1 point]; i. Carpet [1 point]; j. Efficient framing plan [1 point]. Option 3: Minimizing Construction Waste - NC only: k. <2.5 lbs/SF of building [2 points]; l. <1.5 lbs/ SF [3 points].	<i>The waste management plan calls for 75% recycling of waste materials.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
6.11	2	Recycling Storage for Multifamily Project	At single family homes and townhomes, each dwelling unit must be provided with separate bins for the collection of trash and recycling. Or, provide curbside recycling for each dwelling unit. Collected materials should include, at a minimum, paper, cardboard, glass, metals, and plastics. Regardless of building type, provide bins for the separation of trash and recycling at all community rooms and tenant occupied common space (laundry rooms, lobbies, etc.).	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0

Subtotal Category 6 Selected Optional Points **0**

Col. A	Col. B	Column C	Column D	Column E	Column D				
C#	M/O	Criteria Title	Criteria Description <i>[Summary, see full Criteria for complete description]</i>	How Will Criteria Be Implemented? And, where in the plans, specifications, or other place will compliance be documented?	Intent to Comply				
					Yes	No	N/A	WR	OP

7. Healthy Living Environment Category

7.1	M	Radon Mitigation (Mandatory) MN OVERLAY CRITERIA	Provide a sub-slab depressurization system per code at New Construction. Provide testing and remediation per the MN Overlay for acquisition rehabs.	<i>A passive sub-slab depressurization system shall be installed with the capability of easy conversion to an active system if testing results in a reading of 4pCi/L or more. See detail 2/A551.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7.2	M	Reduce Lead Hazards in Pre-1978 Buildings (Mandatory for all applicable rehabs) MN OVERLAY CRITERIA	For single family rehabilitation, refer to the Minnesota Housing Lead Based Paint Guidebook (For Applicable Homes Division Programs).	<i>[Clearly explain how the project will meet all applicable Mandatory requirements]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
7.3	M	Combustion Safety (Mandatory for projects with combustion equipment included in the scope of work) MN OVERLAY CRITERIA	For New Construction and Rehab projects, specify power-vented or direct-vent equipment when installing any new combustion appliance for space or water heating that will be located within the conditioned space. If there are any combustion appliances in the condition space, install hard-wired carbon monoxide (CO) alarm with battery backup function for each sleeping zone, placed per NFPA 72. In Substantial and Moderate Rehab, if there is any combustion equipment located within the conditioned space for space or water heating that is not power-vented or direct-vent and that is not scheduled for replacement, conduct combustion safety testing prior to and after the retrofit.	<i>Only in-unit space and water heating with power-vented or closed combustion equipment shall be used.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7.4	M	Garage Isolation (Mandatory for all projects with attached garage[s])	Provide a continuous air barrier between the conditioned space and any garage space. Do not install ductwork or air handling equipment for the conditioned space in the garage. Fix all connecting doors between conditioned space and garage with gaskets, or otherwise make substantially airtight with weather stripping. Install hard-wired CO alarm with battery backup function for each sleeping zone of the project, placed per NFPA 72, unless the garage is mechanically vented or an open parking structure defined by code.	<i>Continuous air barrier to be installed. Visual inspection to ensure air-sealing. No duct work in garage. Door to have gaskets. CO alarms to be installed per NFPA guidelines.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7.5	M	Integrated Pest Management (Mandatory)	Design for easy inspection of all pest-prone areas (interior and exterior), and engineer slabs and foundations to minimize pest entry. Seal all wall, floor and joint penetrations with low-VOC caulking or other appropriate nontoxic sealing methods to prevent pest entry. Use rodent- and corrosion- proof screens for openings greater than 1/4". Also pay close attention to sealing off entry points under kitchen and bathroom sinks.	<i>All voids to be sealed with low-VOC sealants.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7.6	0	Smoke-Free Policy MN OVERLAY CRITERIA	Implement and enforce a no-smoking policy in all common and individual living areas (dwelling units), and within a 25-foot perimeter around the exterior of all residential projects. The no-smoking restrictions applies to all owners, tenants, guests, and service people. The use of e-cigarettes is prohibited wherever smoking is prohibited. This is an optional criteria with no points available.	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
7.7	M & 9 Max	Ventilation (Mandatory for NC and Substantial Rehab) (Moderate Rehab/ 9 optional points)	Mandatory NC and Sub Rehab: install local mechanical exhaust system in each bathroom; local mechanical exhaust in each kitchen; or whole-house ventilation system. Moderate Rehab Optional points: Bath exhaust [3 points] Kitchen exhaust [3 points] Whole-house mech ventilation system [3 points]	<i>Baths and kitchens shall have mechanical exhaust systems installed to manufacturer's recommendations. Bath fans shall be labeled EnergyStar.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
7.8	5	Dehumidification (Not Mandatory for our climate zone) (Optional points available for all)	<u>Option 1:</u> Keep relative humidity <60%, [5 points], or <u>Option 2:</u> Rough-in for future dehumidification [5 points]	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0

Col. A	Col. B	Column C	Column D	Column E	Column D					
C#	M/O	Criteria Title	Criteria Description <i>[Summary, see full Criteria for complete description]</i>	How Will Criteria Be Implemented? And, where in the plans, specifications, or other place will compliance be documented?	Intent to Comply					
					Yes	No	N/A	WR	OP	
7.9	3	Construction Pollution Management	<u>Option 1:</u> Earn the EPA Indoor airPlus label. [3 points], or, <u>Option 2:</u> In dwelling units, seal all heating, cooling, and ventilation ducts and returns throughout construction to prevent construction debris from entering; flush all dwelling units after completion of construction and prior to occupancy either for at least 48 hours with all windows and interior doors open and all HVAC fans running or with at least 14,000 ft3 per ft2 of floor area, then replace all air handling filters [3 points].	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		0
7.10	3	Noise Reduction	<u>Option 1:</u> Test for and demonstrate that noise levels in bedrooms meet continuous noise and single sound event limits described in the World Health Organization's Guidelines for Community Noise [3 points]. <u>Option 2:</u> Conduct noise assessment and provide a noise abatement plan specific to the site and covering general noise mitigation techniques in accordance with 24 CFR 51B [3 points]. <u>Option 3:</u> Ensure all exterior wall and party wall penetrations are sealed with acoustical sealant, all party walls and floor/ ceiling assemblies have a STC rating of at least 55, and exterior windows and doors in projects near a significant exterior noise source have an STC rating of at least 35 [3 points].	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		0
7.11	8	Active Design: Promoting Physical Activity	<u>Option 1:</u> Encouraging Everyday Stair Usage [8 points], or <u>Option 2:</u> Activity Space [8 points]	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		0
7.12	8	Beyond ADA: Universal Design	<u>Option 1:</u> Create welcoming and accessible spaces that encourage equitable use and social connections. [8 points] <u>Option 2:</u> Create spaces that are easy and intuitive to use and navigate. [8 points] <u>Option 3:</u> Promote safety and create spaces that allow for human error. [8 points] <u>Option 4:</u> Create spaces that can be accessed and used with minimal physical effort. [8 points] <u>Option 5:</u> Create spaces with the appropriate size and space to allow for use, whatever the user's form of mobility, size, or posture. [8 points]	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		0
7.13	8	Healing-Centered Design	Select at least two of the Options listed in the Criteria to implement. Implement each of the selected Options with at least two different strategies. At least one strategy for each Option must be implemented throughout at least 75% of the project's dwelling units [8 points].	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		0

Subtotal Category 7 Selected Optional Points **0**

Col. A	Col. B	Column C	Column D	Column E	Column D				
C#	M/O	Criteria Title	Criteria Description <i>[Summary, see full Criteria for complete description]</i>	How Will Criteria Be Implemented? And, where in the plans, specifications, or other place will compliance be documented?	Intent to Comply				
					Yes	No	N/A	WR	OP

8. Operations, Maintenance + Resident Engagement Category

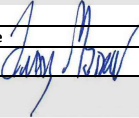
8.1	M	Building Operations and Maintenance Manual and Plan	Develop a manual with thorough building operations and maintenance guidance and a complementary accountability plan. The manual and plan should be developed over the course of the project design, development and construction stages so that knowledge can be transferred from this stage of the project life cycle to the operations and asset management stage.	<i>A residential manual has been developed to be given to each new homeowner.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8.2	O	Emergency Management Manual	Not applicable to single family.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8.3	M	Resident Manual (Mandatory)	Provide a guide for homeowners and renters that explains the intent, benefits, use and maintenance of their home's green features and practices. The Resident Manual should encourage green and healthy activities per the list of topics in the Criteria.	<i>A residential manual has been developed to be given to each new homeowner.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8.4	M	Walk-Throughs and Orientation to Property Operation (Mandatory)	Provide a comprehensive walk-through and orientation for all residents, property manager(s) and buildings operations staff. Orient all property managers and building operations staff within 90 days of initial occupancy of building maintenance and unit turnover procedures. For staff joining after the initial orientation, provide walk-through and orientation to green features within their first 90 days. For all orientations and walk-throughs, share the list of Green Communities Criteria that were implemented in the project and use the appropriate manuals as the base of the curriculum. Review the project's green features, O&M procedures, and emergency protocols.	<i>A walk-through providing orientation will be provided to each new homeowner.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8.5	O	Energy and Water Data Collection and Monitoring (Optional, no points) MN OVERLAY CRITERIA	Provide utility (gas, electric, and water) use per the Criteria.	<i>[If claiming optional points, clearly explain how the project will comply]</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0

Subtotal Category 8 Selected Optional Points **0**

Total Selected Optional Points **0**

Col. A	Col. B	Column C	Column D	Column E	Column D				
C#	M/O	Criteria Title	Criteria Description <i>[Summary, see full Criteria for complete description]</i>	How Will Criteria Be Implemented? And, where in the plans, specifications, or other place will compliance be documented?	Intent to Comply				
					Yes	No	N/A	WR	OP

SUBMITTAL PHASE CERTIFICATIONS

Pre-Construction Phase			
I/we hereby certify to Minnesota Housing that all applicable Mandatory and selected Optional Point Criteria of the 2020 Enterprise Green Communities Criteria as amended by the current/applicable version of the Minnesota Overlay and Guide to the 2020 Enterprise Green Communities Criteria (unless exempt by a Minnesota Housing approved waiver) are incorporated into the approved contract documents and construction contract for the above mentioned development.			
Borrower/Developer/Owner			
Insert Firm/Organization/Company	Signature	Typed/Printed Name of Person Signing	Date
CARVER COUNTY CDA		MELODIE BRIDGEMAN	
Architect of Record/Borrower's Architect (optional)			
Insert Firm/Organization/Company	Signature	Typed/Printed Name of Person Signing	Date
LHB		ANDY MADSON	10/22/24
General Contractor			
Insert Firm/Organization/Company	Signature	Typed/Printed Name of Person Signing	Date

Compliance Certification - End of Construction/Construction Close-Out Phase			
I/we hereby certify to Minnesota Housing that all applicable Mandatory and selected Optional Point Criteria of the 2020 Enterprise Green Communities Criteria as amended by the current/applicable version of the MN Overlay to the 2020 EGCC (unless exempt by a Minnesota Housing approved waiver) are incorporated into the approved contract documents and construction contract for the above mentioned development.			
Borrower/Developer/Owner			
Insert Firm/Organization/Company	Signature	Typed/Printed Name of Person Signing	Date
Architect of Record/Borrower's Architect (optional)			
Insert Firm/Organization/Company	Signature	Typed/Printed Name of Person Signing	Date
General Contractor			
Insert Firm/Organization/Company	Signature	Typed/Printed Name of Person Signing	Date

**SECTION 03 1000
CONCRETE FORMING AND ACCESSORIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.
- B. Openings for other work.
- C. Form accessories.
- D. Form stripping.
- E. Prefabricated riser forms.

1.02 RELATED REQUIREMENTS

- A. Section 03 2000 - Concrete Reinforcing.
- B. Section 03 3000 - Cast-in-Place Concrete.
- C. Section 03 3900 - Concrete Curing.
- D. Section 04 2900 - Engineered Unit Masonry: Reinforcement for engineered masonry.
- E. Section 06 1000 - Rough Carpentry: Embedded steel anchors and plates in cast-in-place concrete and concrete masonry.

1.03 REFERENCE STANDARDS

- A. ACI 301 - Specifications for Structural Concrete; 2010 (Errata 2012).
- B. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2011.
- C. ACI 347R - Guide to Formwork for Concrete; 2014.
- D. PS 1 - Structural Plywood; 2009.

1.04 DESIGN REQUIREMENTS

- A. Design, engineer and construct formwork, shoring and bracing to conform to design and code requirements; resultant concrete to conform to required shape, line and dimension.

1.05 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 347, ACI 301, and ACI 318.
 - 1. Maintain one copy of standards on project site.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver prefabricated forms and installation instructions in manufacturer's packaging.
- B. Store prefabricated forms off ground in ventilated and protected manner to prevent deterioration from moisture.
- C. Protect expanding water stops from exposure to moisture that may cause premature water stop expansion.
- D. Store products under cover to protect from oil, dirt, and sunlight.

PART 2 PRODUCTS

2.01 FORMWORK - GENERAL

- A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in-place concrete work.
- B. Design and construct to provide resultant concrete that conforms to design with respect to shape, lines, and dimensions.
- C. Comply with applicable state and local codes with respect to design, fabrication, erection, and removal of formwork.

2.02 WOOD FORM MATERIALS

- A. Softwood Plywood: PS 1, B-B High Density Concrete Form Overlay, Class I.

2.03 REMOVABLE PREFABRICATED FORMS

- A. Preformed Steel Forms: Minimum 16 gage matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.
- B. Preformed Plastic Forms: Thermoplastic polystyrene form liner, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.
- C. Glass Fiber Fabric Reinforced Plastic Forms: Matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished concrete surfaces.

2.04 FORMWORK ACCESSORIES

- A. Form Ties: Snap-off type, plastic, adjustable length, cone type, with waterproofing washer, 1 inch back break dimension, free of defects that could leave holes larger than 1 inch in concrete surface. Provide _____ manufactured by _____.
- B. Form Release Agent: Capable of releasing forms from hardened concrete without staining or discoloring concrete or forming bugholes and other surface defects, compatible with concrete and form materials, and not requiring removal for satisfactory bonding of coatings to be applied.
- C. Form Release Agent: Colorless mineral oil that will not stain concrete. Provide _____ manufactured by _____.
- D. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.
- E. Embedded Anchor Shapes, Plates, Angles and Bars: As specified in Section 06 1000.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.02 EARTH FORMS

- A. Earth forms are not permitted.

3.03 ERECTION - FORMWORK

- A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.
- B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.
- C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
- D. Align joints and make watertight. Keep form joints to a minimum.
- E. Obtain approval before framing openings in structural members that are not indicated on drawings.
- F. Install void forms in accordance with manufacturer's recommendations. Protect forms from moisture or crushing.
- G. Coordinate this section with other sections of work that require attachment of components to formwork.
- H. If formwork is placed after reinforcement, resulting in insufficient concrete cover over reinforcement, request instructions from Owner before proceeding.

3.04 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

- C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.
- D. At concrete scheduled to receive waterproofing, use only form release agent with prior approval from waterproofing manufacturer.

3.05 INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Provide formed openings where required for items to be embedded in passing through concrete work.
- B. Locate and set in place items that will be cast directly into concrete.
- C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.
- D. Position recessed anchor slots for brick veneer masonry anchors to spacing and intervals specified in Section 04 2613.
- E. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.
- F. Install waterstops in accordance with manufacturer's instructions, so they are continuous without displacing reinforcement. Heat seal joints so they are watertight.
- G. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.
- H. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

3.06 FORM CLEANING

- A. Clean forms as erection proceeds, to remove foreign matter within forms.
- B. Clean formed cavities of debris prior to placing concrete.
 - 1. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.
 - 2. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.07 FORMWORK TOLERANCES

- A. Construct formwork to maintain tolerances required by ACI 117, unless otherwise indicated.

3.08 FORM REMOVAL

- A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
- B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
- C. Store removed forms to prevent damage to form materials or to fresh concrete. Discard damaged forms.

END OF SECTION

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SECTION 03 2000 CONCRETE REINFORCING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Reinforcing steel for cast-in-place concrete.
- B. Supports and accessories for steel reinforcement.

1.02 RELATED REQUIREMENTS

- A. Section 03 1000 - Concrete Forming and Accessories.
- B. Section 03 3000 - Cast-in-Place Concrete.
- C. Section 04 2900 - Engineered Unit Masonry: Reinforcement for engineered masonry.

1.03 REFERENCE STANDARDS

- A. ACI 301 - Specifications for Structural Concrete; 2010 (Errata 2012).
- B. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2011.
- C. ACI SP-66 - ACI Detailing Manual; 2004.
- D. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement; 2007.
- E. ASTM A185/A185M - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete; 2007.
- F. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2022.
- G. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2009a (Reapproved 2014).
- H. ASTM A706/A706M - Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement; 2022a.
- I. ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars; 2022.
- J. CRSI (DA4) - Manual of Standard Practice; 2023.
- K. CRSI (P1) - Placing Reinforcing Bars; 2011.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Comply with requirements of ACI SP-66 Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.
- C. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301, ACI SP-66, CRSI Manual of Standard Practice, ACI 301, ACI SP-66, CRSI Manual of Standard Practice, ACI 301, ACI SP-66, and CRSI Manual of Standard Practice.
- B. Reinforcing materials will be verified by Owner's representative in accordance with Section 01 4000.

PART 2 PRODUCTS

2.01 REINFORCEMENT

- A. Reinforcing Steel: ASTM A 615/A 615M Grade 60 (420)
 - 1. Deformed billet-steel bars.
 - 2. Unfinished, except as noted.
 - 3. Epoxy coated in accordance with ASTM A 775/A 775M.

- B. Reinforcement Accessories:
 - 1. Tie Wire: Annealed, minimum 16 gage.
 - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
 - a. Precast concrete blocks of strength equal to or greater than specified strength of concrete or Class 3 supports equipped with sand plates, where concrete will be cast against earth. Concrete masonry units will not be acceptable.
 - 3. Epoxy Coating Repair Compound: Meeting ASTM A775 with minimum 70% solids.

2.02 FABRICATION

- A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.
- B. Welding of reinforcement is not permitted, unless specifically noted on the Drawings.

PART 3 EXECUTION

3.01 PLACEMENT

- A. Place, support and secure reinforcement against displacement. Do not deviate from required position.
- B. Repair epoxy coating with epoxy coating repair compound. Follow manufacturer's recommendations.
- C. Do not displace or damage vapor retarder.
- D. Accommodate placement of formed openings.
- E. Conform to ACI 318 code for concrete cover over reinforcement.

3.02 FIELD QUALITY CONTROL

- A. An independent testing agency, as specified in Section 01 4000, will inspect installed reinforcement for conformance to contract documents before concrete placement.

END OF SECTION

SECTION 03 3000
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Slabs on grade.
- B. Concrete footings and foundations (contractors option to construct foundation walls with Concrete Masonry Units - See Section 04 2731 Reinforced Unit Masonry).
- C. Joint devices associated with concrete work.
- D. Miscellaneous concrete elements, including equipment pads and light pole bases.
- E. Installation of embedments and bearing plates in concrete.

1.02 RELATED REQUIREMENTS

- A. Section 03 1000 - Concrete Forming and Accessories: Forms and accessories for formwork.
- B. Section 03 2000 - Concrete Reinforcing.
- C. Section 03 3900 - Concrete Curing.
- D. Section 04 2731 - Reinforced Unit Masonry: Grout for use in masonry.
- E. Section 07 2620 - Under-Slab Vapor Retarder.
- F. Section 07 9005 - Joint Sealers: Sealants for saw cut joints and isolation joints in slabs.

1.03 REFERENCE STANDARDS

- A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; 2010.
- B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).
- C. ACI 301 - Specifications for Structural Concrete; 2010 (Errata 2012).
- D. ACI 302.1R - Guide for Concrete Floor and Slab Construction; 2004 (Errata 2007).
- E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000.
- F. ACI 305R - Hot Weather Concreting; 2010.
- G. ACI 306R - Cold Weather Concreting; 2010.
- H. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2011.
- I. ACI 347R - Guide to Formwork for Concrete; 2014.
- J. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement; 2009.
- K. ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars; 2007b (Reapproved 2014).
- L. ASTM C 31 - Standard Practice for Making and Curing Concrete Test specimens in the Field; 2006.
- M. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2013.
- N. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2015a.
- O. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2015.
- P. ASTM C 138 - Standard Test Method for Density (Unit Weight), Yield and Air Content (Gravimetric) of Concrete; 2008.
- Q. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2012.
- R. ASTM C150/C150M - Standard Specification for Portland Cement; 2015.
- S. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2013.

- T. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2015.
- U. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2014.
- V. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2013.
- W. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2014.
- X. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2004 (Reapproved 2013).
- Y. ASTM E1155 - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers; 1996 (Reapproved 2008).
- Z. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2011.
- AA. COE CRD-C 572 - Corps of Engineers Specifications for Polyvinylchloride Waterstop; 1974.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements.
- C. Mix Design: Submit proposed concrete mix design.
 - 1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.
 - 2. Indicate proposed mix design complies with requirements of ACI 318, Chapter 5 - Concrete Quality, Mixing and Placing.
- D. Product data and certification that lightweight aggregates have been manufactured, sampled and tested in accordance with ASTM C330 and have been found to be in full compliance with specified requirements.
- E. Quality Control Data: Submit the following information:
 - 1. Description of planned protective measures for hot or cold weather concreting. The plans shall incorporate means and methods to prevent detrimental frost penetration and freezing of concrete and supporting soils.
- F. Test Reports: Submit report for each test or series of tests specified.
- G. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

1.05 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301 and ACI 318.
 - 1. Maintain one copy of each document on site.
- B. Acquire cement from same source and aggregate from same source for entire project.
- C. Follow recommendations of ACI 305R when concreting during hot weather.
- D. Follow recommendations of ACI 306R when concreting during cold weather.

PART 2 PRODUCTS

2.01 FORMWORK

- A. Comply with requirements of Section 03 1000.

2.02 REINFORCEMENT

- A. Comply with requirements of Section 03 2000.

2.03 CONCRETE MATERIALS

- A. Cement: ASTM C150, Type I - Normal Portland type.
 - 1. Acquire all cement for entire project from same source.
- B. Fine and Coarse Aggregates: ASTM C 33.
 - 1. Acquire all aggregates for entire project from same source.
- C. Fly Ash: ASTM C618, Class C or F.
- D. Water: Clean and not detrimental to concrete.
- E. Fiber Reinforcement: Synthetic fiber shown to have long-term resistance to deterioration when exposed to moisture and alkalis; 1 1/2 inch length.

2.04 ADMIXTURES

- A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- B. Accelerating Admixture: ASTM C494/C494M Type C.
- C. Retarding Admixture: ASTM C494/C494M Type B.
- D. Water Reducing Admixture: ASTM C 494/C 494M Type A and/or Type F.
- E. Air Entrainment Admixture: ASTM C 260. 6% +/- 1.5% Air Entrainment required for concrete exposed to freeze-thaw conditions.

2.05 ACCESSORY MATERIALS

- A. Under-Slab Vapor Retarder: Comply with the requirements of Section 07 2620.

2.06 BONDING AND JOINTING PRODUCTS

- A. Waterstops: PVC, complying with COE CRD-C 572.
- B. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.
- C. Joint Filler: Nonextruding, resilient asphalt impregnated fiberboard or felt, complying with ASTM D1751, 1/4 inch thick and full depth of slab less 1/2 inch .
- D. Construction Joint Devices: As detailed on the drawings.
- E. Sealant and Primer: As specified in Section 07 9005.

2.07 CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures for normal weight concrete, and strictly by trial mix for lightweight concrete, as specified in ACI 301.
 - 1. For trial mixtures method, employ independent testing agency acceptable to Owner for preparing and reporting proposed mix designs.
 - 2. Where trial mixtures are used, they shall be completed, tested and approved by the Owner prior to use on the site. In addition, the trial mixtures shall include all admixtures that will be used in the field. Additional trial mixtures shall be required for all variations of mix components and admixtures.
- C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1, as appropriate for environmental conditions, and at rates recommended by manufacturer.
- D. Fiber Reinforcement: Add to mix at rate of 1.5 pounds per cubic yard, or as recommended by manufacturer for specific project conditions.
- E. Normal Weight Concrete:
 - 1. Compressive Strength, Slump, Aggregate and Air: As noted on the Drawings.
 - 2. Admixtures: Add acceptable admixtures as recommended in ACI 211.1, as appropriate for environmental conditions, and at rates recommended by manufacturer.

3. Fly Ash Content: Maximum 25 percent of cementitious materials by weight, except maximum 15 percent in floor slabs.

2.08 CONTROL OF MIX IN THE FIELD

- A. Slump: A tolerance of up to 1 inch above that specified will be permitted for one batch in five consecutive batches tested. Concrete of lower slump than that specified may be used, provided proper placing and consolidation is obtained.
 1. If slump upon arrival at the site is lower than 1 inch below the value specified, one addition of water in accordance with ASTM C 94 will be permitted to bring slump within tolerance, provided that:
 - a. A positive means is available to measure the amount of water added at the site.
 - b. The specified (or approved) maximum water-cement ratio is not exceeded.
 - c. Not more than 45 minutes have elapsed since batching.

2.09 MIXING

- A. Transit Mixers: Comply with ASTM C94/C94M.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

- A. Verify that forms are clean and free of rust before applying release agent.
- B. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- C. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
- D. Install vapor retarder in accordance with Section 07 2620 under interior slabs on grade. Place as noted on the Drawings.

3.03 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
- B. Place concrete for floor slabs in accordance with ACI 302.1R.
- C. Notify Owner not less than 24 hours prior to commencement of placement operations.
- D. It is recommended that truck deliveries be spaced for lightweight concrete such that minor mix adjustments may be made to subsequent batches as needed.
- E. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.
- F. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

3.04 SLAB JOINTING

- A. Locate joints as indicated on drawings.
- B. Anchor joint fillers and devices to prevent movement during concrete placement.
- C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
- D. Separate slabs on grade from vertical surfaces with joint filler.
- E. Install joint devices in accordance with manufacturer's instructions.
- F. Install construction joint devices in coordination with floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
- G. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

- H. Consolidate all concrete, including slabs, by vibrating.
- I. Place concrete continuously between predetermined expansion, control, and construction joints.
- J. Place slabs-on-grade to thickness noted on drawings. Thicknesses noted are minimums, not averages.
- K. Screed floors and slabs on grade level, or as noted on the Drawings, maintaining surface flatness as specified.
- L. Do not interrupt successive placement; do not permit cold joints to occur.
- M. Joint floor slabs in saw cut pattern indicated.
- N. Complete sawing all control joints within 12 hours after placing concrete. Use 1/4 inch thick blade, cut to 1/4 depth of slab thickness.
- O. Wall Vertical Control Joints
 - 1. Spaced at 20' maximum unless noted otherwise.
 - 2. Do not locate any key splices at joint.
 - 3. Form V-notch at each face with strips attached to insides of forms.
 - 4. Combined depth of notches shall equal approximately 20% of total wall thickness.

3.05 FLOOR FLATNESS AND LEVELNESS TOLERANCES

- A. Maximum Variation of Surface Flatness:
 - 1. Exposed Concrete Floors: 1/4 inch in 10 ft.
 - 2. Under Seamless Resilient Flooring: 1/4 inch in 10 ft.
 - 3. Under Carpeting: 1/4 inch in 10 ft.
- B. Correct the slab surface if tolerances are less than specified.
- C. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.06 CONCRETE FINISHING

- A. Repair surface defects, immediately after removing formwork.
- B. Unexposed Formed Surfaces (except footings):
 - 1. Smooth-Form Finish: Patch tie holes and defects, remove fins or other raised areas 1/8 inch or more in height.
- C. Exposed Formed Surfaces: Patch tie holes and defects, remove fins or other raised areas 1/8 inch or more in height. Provide finish as follows:
 - 1. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.
 - 2. Grout Cleaned Finish: Wet areas to be cleaned and apply grout mixture by brush or spray; scrub immediately to remove excess grout. After drying, rub vigorously with clean burlap, and keep moist for 36 hours.
 - 3. Cork Floated Finish: Immediately after form removal, apply grout with trowel or firm rubber float; compress grout with low-speed grinder, and apply final texture with cork float.
- D. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
 - 1. Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI 301.1R; thin floor coverings include carpeting, resilient flooring, seamless flooring, thin set quarry tile, and thin set ceramic tile.
 - 2. Other Surfaces to Be Left Exposed: "Steel trowel" as described in ACI 302.1R, minimizing burnish marks and other appearance defects.

3.07 CURING AND PROTECTION

- A. Comply with requirements of Section 03 3900.

3.08 FIELD QUALITY CONTROL

- A. Notify Owner for inspection of vapor retarder installation prior to concrete pour or covering.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.

- C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
- D. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.
- E. Test samples for pumped concrete shall be acquired at the discharge end of the hose.
- F. Periodically verify proper concrete placement technique.
- G. Compressive Strength Tests: ASTM C 39/C 39M. For each test, mold and cure three concrete test cylinders. Obtain test samples for every 50 cu yd or less of each class of concrete placed per day.
- H. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
- I. Perform one slump test and check temperature for each set of test cylinders taken, following procedures of ASTM C 143/C 143M.
- J. Perform one air test for each set of cylinders taken for air-entrained concrete.

3.09 DEFECTIVE CONCRETE

- A. Test Results: The testing agency shall report test results in writing to Owner and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete will be determined by the Owner. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Owner for each individual area.

3.10 PROTECTION

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION 03 3000

SECTION 03 3900
CONCRETE CURING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Initial and final curing of horizontal and vertical concrete surfaces.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete.

1.03 REFERENCE STANDARDS

- A. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International; 2004 (errata 2007) .
- B. ACI 308R - Guide to Curing Concrete; American Concrete Institute International; 2001 (Reapproved 2008).
- C. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; 2007.
- D. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2007.
- E. ASTM D2103 - Standard Specification for Polyethylene Film and Sheeting; 2008.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on curing compounds and moisture-retaining sheet, including compatibility of different products and limitations.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 301 and ACI 302.1R.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver curing materials in manufacturer's sealed packaging, including application instructions.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Membrane Curing Compound: ASTM C 309 Type 1 - Clear or translucent, Class A.
 - 1. Water-Based Acrylic type.
 - 2. Provide Kure-N-Seal (TM) W manufactured by BASF Sonneborn.
- B. Membrane Curing, Hardening, Sealing, and Dustproofing Compound
 - 1. Alkali-silicate hardener.
 - 2. Provide Kure-N-Harden (TM) manufactured by BASF Sonneborn.
- C. Moisture-Retaining Sheet: ASTM C171.
 - 1. White-burlap-polyethylene sheet, weighing not less than 10 oz/per linear yd, 40 inches wide.
- D. Polyethylene Film: ASTM D2103, 4 mil thick, clear.
- E. Water: Potable, not detrimental to concrete.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are ready to be cured.

3.02 EXECUTION - HORIZONTAL SURFACES

- A. Ponding: Maintain 100 percent coverage of water over floor slab areas, continuously for 3 days.
- B. Spraying: Spray water over floor slab areas and maintain wet for 3 days.

- C. Moisture-Retaining Sheet: Lap strips not less than 3 inches and seal with waterproof tape or adhesive; secure at edges; maintain in place for not less than 3 days.
- D. Absorptive Moisture-Retaining Sheet: Saturate burlap-polyethylene and place burlap-side down over floor slab areas, lapping ends and sides; maintain in place for 3 days.
- E. Membrane Curing Compound: Apply curing compound in accordance with manufacturer's instructions in two coats, with second coat applied at right angles to first.
- F. Membrane Curing, Hardening, Sealing, and Dustproofing Compound: Apply in accordance with manufacturer's instructions.

3.03 EXECUTION - VERTICAL SURFACES

- A. Cure surfaces in accordance with ACI 308.
- B. Spraying: Spray water over surfaces and maintain wet for 5 days.
- C. Membrane Curing Compound: Apply compound in accordance with manufacturer's instructions in two coats, with second coat applied at right angles to first.

3.04 PROTECTION

- A. Do not permit traffic over unprotected floor surface.

3.05 FIELD QUALITY CONTROL

- A. Owner's representative will check maintenance of curing procedures in accordance with Section 01 4000.

3.06 SCHEDULES

- A. Floors to receive floor coverings, coatings or other products that may react adversely to membrane curing compounds: Wet or moist cure method: ponding, spraying, moisture-retaining sheet or absorptive moisture-retaining sheet.
- B. All Other Floor Areas: Membrane curing compound.

END OF SECTION 03 3900

SECTION 04 2731
REINFORCED UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete Block Foundation walls (contractors option to construct foundation walls with Cast in Place Concrete - See Section 03 3000 Cast in Place Concrete)
- B. Mortar and Grout.
- C. Reinforcement and Anchorage.
- D. Flashings.
- E. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 05 5000 - Metal Fabrications: Loose steel lintels.

1.03 REFERENCE STANDARDS

- A. ACI 530/530.1/ERTA - Building Code Requirements and Specification for Masonry Structures and Related Commentaries; 2011.
- B. ACI 530.1/ASCE 6/TMS 602 - Specification For Masonry Structures; American Concrete Institute International; 2008.
- C. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement; 2007.
- D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- E. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement; 2015.
- F. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2009a (Reapproved 2014).
- G. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- H. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- I. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units; 2014.
- J. ASTM C91/C91M - Standard Specification for Masonry Cement; 2012.
- K. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2015.
- L. ASTM C140/C140M - Standard Test Methods of Sampling and Testing Concrete Masonry Units and Related Units; 2014.
- M. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2011.
- N. ASTM C150/C150M - Standard Specification for Portland Cement; 2015.
- O. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2006 (Reapproved 2011).
- P. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2014a.
- Q. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2011.
- R. ASTM C476 - Standard Specification for Grout for Masonry; 2010.
- S. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms; 2014.
- T. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2009.

- U. IMIAWC (CW) - Recommended Practices & Guide Specifications for Cold Weather Masonry Construction; International Masonry Industry All-Weather Council; 1993.
- V. IMIAWC (HW) - Recommended Practices & Guide Specifications for Hot Weather Masonry Construction; International Masonry Industry All-Weather Council; current edition.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data for masonry units, fabricated wire reinforcement, and mortar and grout.
- C. Shop Drawings: Indicate bar sizes, spacings, reinforcement quantities, bending and cutting schedules, reinforcement supporting and spacing devices, and accessories.
- D. Design Data: Indicate required mortar strength, unit assembly strength in each plane, and supporting test data.
- E. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

- A. See Section 01 4000 for testing and inspections requirements.
- B. Provide protection which will limit moisture absorption of concrete masonry units to the maximum percentage specified for the Type I units at a relative humidity which is normal for the project site.
- C. Source Control: Obtain each type of exposed masonry unit from a single manufacturer, with texture and color of each type uniform or of a uniform blend acceptable to Owner.
- D. Mock-up: Prior to commencement of exposed masonry work, erect sample panel to serve as standard of appearance and workmanship throughout the construction period.
 - 1. Build at location and to design and as indicated on drawings, or as otherwise directed by the Owner.
 - 2. Do not begin mock-up construction until the Owner is present.
 - 3. Adjust until mock-up appearance and workmanship are acceptable to the Owner.
 - 4. Upon completion of construction and at the direction of the Owner demolish mock-up construction completely and remove debris.

1.06 PRE-INSTALLATION MEETING

- A. Convene one week before starting work of this section.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

1.08 FIELD CONDITIONS

- A. Maintain materials and surrounding air temperature to minimum 40 degrees F prior to, during, and 48 hours after completion of masonry work.
- B. Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

- A. Concrete Block: Comply with referenced standards and as follows:
 - 1. Size: Standard units with nominal face dimensions of 16 x 8 inches and nominal depths as indicated on the drawings for specific locations.
 - 2. Special Shapes: Provide non-standard blocks configured for corners, lintels, control joint edges, and other detailed conditions.
 - 3. Load-Bearing Units: ASTM C90, normal weight.
 - a. Hollow block, as indicated.
 - b. Exposed faces: Manufacturer's standard color and texture where indicated.

- c. Retaining walls: Rock face block; color to be selected from manufacturer's full range of standard colors.

2.02 MORTAR AND GROUT MATERIALS

- A. Masonry Cement: ASTM C 91 Type S above grade and Type M below grade.
- B. Portland Cement: ASTM C150/C150M, Type I; color as required to produce approved color sample.
 - 1. Hydrated Lime: ASTM C207, Type S.
 - 2. Mortar Aggregate: ASTM C144.
 - 3. Grout Aggregate: ASTM C404.
- C. Water: Clean and potable.

2.03 REINFORCEMENT AND ANCHORAGE

- A. Reinforcing Steel: ASTM A615/A615M Grade 60 (420).
 - 1. Deformed billet-steel bars.
 - 2. Unfinished.
- B. Single Wythe Joint Reinforcement: Truss type; ASTM A 82/A 82M steel wire, hot dip galvanized after fabrication to ASTM A 153/A 153M, Class B; 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage on each exposure.
 - 1. Manufacturers:
 - a. Dur-O-Wal: www.dur-o-wal.com.
 - b. Substitutions: See Section 01 6000 - Product Requirements.

2.04 ACCESSORIES

- A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.
- B. Nailing Strips: Softwood lumber, preservative treated; as specified in Section 06 1000.

2.05 MORTAR MIXING

- A. Thoroughly mix mortar ingredients using mechanical batch mixer, in accordance with ASTM C270 and in quantities needed for immediate use.
- B. Maintain sand uniformly damp immediately before the mixing process.
- C. Add mortar color in accordance with manufacturer's instructions. Provide uniformity of mix and coloration.
- D. Do not use anti-freeze compounds to lower the freezing point of mortar.
- E. If water is lost by evaporation, re-temper only within two hours of mixing.
- F. Use mortar within two hours after mixing at temperatures of 90 degrees F, or two-and-one-half hours at temperatures under 40 degrees F.

2.06 GROUT MIXES

- A. Engineered Masonry: 3,000 psi strength at 28 days; 8-10 inches slump; mix in accordance with ASTM C 476.
 - 1. Fine grout for spaces with smallest horizontal dimension of 2 inches or less.
 - 2. Coarse grout for spaces with smallest horizontal dimension greater than 2 inches.

2.07 GROUT MIXING

- A. Mix grout in accordance with ASTM C94/C94M.
- B. Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C476 for fine and coarse grout.
- C. Do not use anti-freeze compounds to lower the freezing point of grout.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive masonry.
- B. Verify that related items provided under other sections are properly sized and located.
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION

- A. Direct and coordinate placement of metal anchors supplied for installation under other sections.
- B. Clean reinforcement of loose rust.
- C. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COURSING

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Concrete Masonry Units:
 - 1. Bond: Running.
 - 2. Coursing: One unit and one mortar joint to equal 8 inches.
 - 3. Mortar Joints: Concave.

3.04 PLACING AND BONDING

- A. Lay hollow masonry units with face shell bedding on head and bed joints.
- B. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- C. Remove excess mortar as work progresses.
- D. Interlock intersections and external corners.
- E. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- F. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- G. Cut mortar joints flush where wall tile is scheduled or resilient base is scheduled.

3.05 REINFORCEMENT AND ANCHORAGE

- A. Reinforcement Bars: Secure at locations indicated and to avoid displacement during grouting. Minimum spacing between bars or to masonry surfaces shall be one bar diameter.
 - 1. Welding of splices is not permitted.
- B. Joint Reinforcement: Install horizontal joint reinforcement 16 inches on center, 8 inches on center for stack bond application.
 - 1. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
 - 2. Place continuous joint reinforcement in first and second joint below top of walls.
 - 3. Lap joint reinforcement ends minimum 12 inches.
- C. Reinforced Hollow Unit Masonry: Keep vertical cores to be grouted clear of mortar, including bed area of first course.
 - 1. Bond Beams: At bond beams or other locations for horizontally reinforced masonry, provide special masonry units or saw to accommodate reinforcement.

3.06 GROUTING

- A. Perform all grouting by means of low-lift technique at a height not to exceed 5 feet. Do not employ high-lift grouting.

3.07 CONTROL JOINTS

- A. Do not continue horizontal joint reinforcement through control joints.
- B. Form control joint with a sheet building paper bond breaker fitted to one side of the hollow contour end of the block unit. Fill the resultant core with grout fill. Rake joint at exposed unit faces for placement of backer rod and sealant.
- C. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.
- D. Unless otherwise indicated, vertical control joints shall be installed as follows at a minimum:
 - 1. A maximum spacing of 25 feet, but not more than 1.5 times the wall height (interior or exterior), in walls with no openings.
 - 2. All changes in wall height or thickness.
 - 3. Above movement joints in foundations and floors.
 - 4. Below movement joints in roofs or floors that bear on the wall.
 - 5. At one side of wall openings 6 feet wide or less.
 - 6. At both sides of openings wider than 6 feet.
 - 7. Adjacent to corners of walls or intersections within a distance equal to half of the control joint spacing.
- E. Provide two 1/2" smooth dowels greased at one end where control joints pass through bond beams unless noted otherwise.
- F. Above doors and windows, the joints must be offset to the ends of the lintels. Provide a horizontal slip plane where reinforced lintel beams terminate at a control joint.

3.08 BUILT-IN WORK

- A. As work progresses, install built-in metal door frames and other items to be built into the work and furnished under other sections.
- B. Install built-in items plumb, level, and true to line.
- C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.
 - 1. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.
- D. Do not build into masonry construction organic materials that are subject to deterioration.

3.09 TOLERANCES

- A. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
- B. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
- C. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
- D. Maximum Variation of Joint Thickness: 1/8 inch in 3 ft.
- E. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.10 FIELD QUALITY CONTROL

- A. Testing and Inspection will be conducted by an independent test agency, in accordance with provisions of Section 01 4000.
 - 1. Reinforcement and grouting installation: Periodically verify placement of reinforcement and grouting technique. Verify that grout spaces are correctly sized, cleaned, and cleanouts are closed after inspection.
 - 2. Verify compliance of masonry installation with construction documents and submittals.

3.11 CLEANING

- A. Remove excess mortar and mortar smears as work progresses.
- B. Replace defective mortar. Match adjacent work.
- C. Clean soiled surfaces with cleaning solution.

- D. Use non-metallic tools in cleaning operations.

3.12 PROTECTION

- A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION 04 2731

SECTION 05 5000 METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Shop fabricated steel and aluminum items.
- B. Window wells.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

- A. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- C. ASTM B211/B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire; 2019.
- D. ASTM B247 - Standard Specification for Aluminum and Aluminum-Alloy Die Forgings, Hand Forgings, and Rolled Ring Forgings; 2020.
- E. ASTM B429/B429M - Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube; 2020.
- F. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2021.
- G. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

- A. Factory Galvanized Steel Sheets: ASTM A653/A653M
- B. Bolts, Nuts, and Washers: ASTM A307, Grade A, plain.
- C. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 MATERIALS - ALUMINUM

- A. Aluminum-Alloy Bars: ASTM B211/B211M, 6061 alloy, T6 temper.
- B. Aluminum and Aluminum Die Forgings, Hand Forgings and rolled Ring Forgings: ASTM B247
- C. Aluminum-Alloy Extruded Structural Pipe and Tube: ASTM B429/B429M
- D. Bolts, Nuts, and Washers: Stainless Steel.

2.03 WINDOW WELLS

- A. Corrugated galvanized metal window well panels.
- B. Size: Length, depth and height as indicated on drawings.
- C. Panels to include flange to fasten to foundation.

2.04 FABRICATION

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Grind exposed welded joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- D. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.05 FABRICATED METAL ITEMS

- A. Window Wells: Corrugated galvanized steel window well panels.
 - 1. Manufactured from 16 gauge factory galvanized steel sheets (G-90); ASTM A653/A653M. Tops and bottoms (for wells 48 inches or deeper) shall have full-rolled beads.
 - 2. Size: Length, depth and height as indicated on drawings.
 - 3. Style: Straight with radius corners.
 - 4. Panels to include flanges to accommodate fastening to the foundation.
 - 5. Acceptable manufacturers:
 - a. St. Paul Corrugating Company; Imperial Lux-Right: www.stpaulcorrugating.com.
 - b. Substitutions: See Section 01 6000 - Product Requirements for substitution procedures.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

- A. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION GENERAL

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Install area wells per manufacturer's instructions.
- C. Install railings per manufacturer's instructions.

END OF SECTION

SECTION 06 1000
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Structural dimension lumber framing.
- B. Structural wall framing.
- C. Floor, wall, and roof sheathing.
- D. Subflooring.
- E. Exterior wall sheathing, roof sheathing and shear wall sheathing.
- F. Non-structural dimension lumber framing.
- G. Rough opening framing for doors, windows, and roof openings.
- H. Preservative treated wood materials.
- I. Underlayment.
- J. Roofing nailers.
- K. Communications and electrical room mounting boards.
- L. Concealed wood blocking, nailers, and supports.
- M. Miscellaneous wood nailers, blocking, sleepers and furring strips.

1.02 RELATED SECTIONS

- A. Section 01 9100 - Green Building Requirements: Blower door testing requirement
- B. Section 04 2731 - Reinforced Unit Masonry: Setting sill anchor bolts and other anchors in masonry.
- C. Section 06 1753 - Shop-Fabricated Wood Trusses.
- D. Section 06 2000 - Finish Carpentry.
- E. Section 07 2610 - Weather Resistant Membranes: Weather resistant membrane to be installed over exterior sheathing.
- F. Section 07 6200 - Sheet Metal Flashing and Trim: Sill flashings.
- G. Section 07 9005 - Joint Sealers: Blower door testing requirements

1.03 REFERENCE STANDARDS

- A. AFPA (WFCM) - Wood Frame Construction Manual for One and Two-Family Dwellings; American Forest and Paper Association; 2001.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- D. ASTM A 123/A 123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2000.
- E. ASTM A 1008/A 1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability; 2002.
- F. ASTM A 1011/A 1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability; 2002.
- G. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2014.
- H. C1278/C1278M-01 Standard Specification for Fiber-Reinforced Gypsum Panel.

- I. AWP U1 - Use Category System: User Specification for Treated Wood; 2012.
- J. PS 2 - Performance Standard for Wood-Based Structural-Use Panels; 2010.
- K. PS 20 - American Softwood Lumber Standard; 2010.

1.04 QUALITY ASSURANCE

- A. Lumber: Comply with PS 20 and approved grading rules and inspection agencies.
- B. Regulatory Requirements: Comply with requirements for lumber and framing of each of the following agencies:
 - 1. Minnesota State Building Code.
 - 2. International Residential Code.
 - 3. Minimum Property Requirements by the Federal Housing Authority.
 - 4. Minnesota Housing Finance Agency.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Cover wood products to protect against moisture at all times. Protect against exposure to weather and contact with damp or wet surfaces. Support stacked products (lumber, structural units, and panels) to prevent deformation and to allow air circulation.

1.06 PROJECT CONDITIONS

- A. Coordination: Fit carpentry work to other work; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds and similar supports to allow proper attachment of other work.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
 - 2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
- B. Lumber fabricated from old growth timber is not permitted.
- C. All sheathing resins and all adhesives and sealers shall be Low-VOC or No-VOC emitting products except in any case where a required warrantee is voided by such product usage.
- D. All sheathing products shall meet APA Standards for emissions and shall contain no added urea-formaldehyde.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- A. Grading Agency: To comply with PS 20 and applicable grading rules of inspection agencies certified by ALSC's Board of Review.
- B. Sizes: Nominal sizes as indicated on drawings, S4S. Provide actual sizes as required by PS 20, for moisture content specified for each use.
- C. Moisture Content: S-dry or MC19.
- D. Stud Framing (2 by 2 through 2 by 6):
 - 1. Species: Hem-Fir.
 - 2. Grade: Stud Grade or better.
- E. Joist, Rafter, and Small Beam Framing (2 by 6 through 4 by 16):
 - 1. Species: Hem-Fir, Douglas Fir-Larch, S.P.F..
 - 2. Grade: No. 2 or better.
- F. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 - 1. Lumber: S4S, No. 2 or Standard Grade.

2. Boards: Standard or No. 3.

2.03 EXPOSED DIMENSION LUMBER

- A. Sizes: Nominal sizes as indicated on drawings.
- B. Surfacing: S4S.
- C. Species and grade as indicated for structural framing which will not be concealed and in compliance with "Appearance" grade requirements of ALSC National Grading Rule; issue inspection certificate of inspection agency for selected material.
- D. Moisture Content: S-dry or MC19.

2.04 STRUCTURAL COMPOSITE LUMBER

- A. Structural Composite Lumber: Factory fabricated beams, headers, and columns, of sizes and types indicated on drawings; structural capacity as published by manufacturer.
- B. Exterior Engineered Columns: at porches
 1. Product: Structural Realwood, RealPost by Woodtone
 - a. Size: 6x6
 - b. Kiln dried western SPF
 - c. Finger jointed and edge-glued
 - d. Ultra-low VOC Hybrid Alkyd Emulsion Primer, flood coated on all 6 sides, double end sealed
 - e. Finish: Grey Primed, ready to paint
 - f. Warranty: 15 year
 2. Substitutions: See Section 01 6000 - Product Requirements for substitution procedures

2.05 CONSTRUCTION PANELS

- A. Subfloor/Underlayment Combination: Any PS 2 type, rated Single Floor.
 1. Oriented Strand Board.
 2. Bond Classification: Exterior.
 3. Span Rating: 48.
 4. Performance Category: 1-1/8 PERF CAT.
 5. Thickness: 23/32 inches, nominal.
- B. APA Rated Underlayment for Resilient Flooring: Exposure 1, 1/4 inch thick. Fully sanded faces at resilient flooring.
- C. APA Rated Roof Sheathing: Exposure 1, and as follows:
 1. Oriented Strand Board.
 2. Span Rating: 40/24 inches.
 3. Thickness: 19/32 inches.
 4. Manufacturer: Use low-emitting resins.
- D. APA Rated Wall Sheathing (for behind siding and designated shear walls): Exposure 1, and as follows:
 1. Oriented Strand Board.
 2. Thickness: 15/32 inch.
 3. Manufacturer: Use low-emitting resins.
- E. Roof Blocking: APA rated sheathing, Exposure 1, plywood.
- F. Exterior Plywood Backing Panels: 5/8" inch M.D.O. plywood. Exterior exposure.
- G. OSB adhesive to meet APA spec AFG-01, low-VOC "Adhesives for Field-Gluing Plywood to Wood Framing" and Rule 1168 of the South Coast Air Quality Management District. Apply at all contact points where floor sheathing contacts framing members.

2.06 MISCELLANEOUS MATERIALS

- A. Stair Treads: 1-1/4 inch particle board or 2X pine board.
- B. Stair Risers: 1X pine board.

2.07 ACCESSORIES

- A. Fasteners and Anchors:
 - 1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
 - 2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.
 - 3. Anchors: Expansion shield and lag bolt type for anchorage to solid masonry or concrete.
- B. Rough Hardware: Provide rough hardware as necessary for the project including nails, bolts, anchors, corner bracing, joist hangers, truss hangers, and post base plates. Provide shear wall tie-downs as noted or detailed in structural drawings. Coordinate to location with anchor bolt placement. Hardware exposed to weather, in contact with ground, or in wet areas shall be hot-dipped galvanized. Framing anchors shall be not less than 18 gage, by Simpson, Teco, or Cleveland.
- C. Sill Gasket on Top of Foundation Wall and at jambs and sill of basement window: 1 inch thick, 6 inch wide, compressible to 1/32 inch; or poly-foam.
- D. Subfloor Glue: Waterproof, water base, air cure type, cartridge dispensed. APA specification AFG-01, low VOC.
- E. Roof Sheathing Clips: APA Plyclips.
- F. Safing Insulation: Thermafiber safing insulation by U.S.G. (ASTM 665 Type 1)
- G. Acoustic Sealant: By Tremco, USG, or Pecora.
- H. Miscellaneous backing for accessories and casework installation.

2.08 FACTORY WOOD TREATMENT

- A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
 - 1. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

PART 3 EXECUTION

3.01 PREPARATION

- A. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.
- B. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components including shims, bracing and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.
- D. Discard units of material with defects which might impair quality of work, and units which are too small to use in fabricating work with minimum joints or optimum joint arrangement. Set carpentry work accurately to required levels and lines, with members plumb and true and accurately cut and fitted. Securely attach carpentry work to substrate by anchoring and fastening as shown and as required by recognized standards. Countersink nail heads on exposed carpentry work and fill holes. Use common wire nails, except as otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; predrill as required. All exposed fasteners to be located in an orderly and logical pattern.

3.03 FRAMING INSTALLATION

- A. General: Framing shall comply with the IBC, "Manual of House Framing" by National Forest Products Association, the FHA Minimum Property Requirements (latest edition), the "Techniques of House Nailing" by the Forest Products Laboratory, and the Minnesota Housing Finance Agency.
- B. Wood frame structures shall be carefully laid out to the elevations and dimensions required. The wood frame shall be securely anchored to the concrete foundation. All members shall be plumb and level, securely fastened to insure rigidity.
- C. Securely attach carpentry work to substrate by anchoring and fastening as shown and as required by recognized standards. Countersink nail heads on exposed carpentry work and fill holes. Use common wire nails, except as otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; predrill as required. Anchor and nail using the size and number of nails noted in the U.B.C. or as recommended by the manufacturer. In addition, follow the requirements for pneumatically or mechanically driven staples, nails and fasteners, Report NER-272 by the Council of American Building Officials.
- D. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.
- E. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.
- F. Install structural members full length without splices unless otherwise specifically detailed.
- G. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AFPA Wood Frame Construction Manual.
- H. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.
- I. Frame wall openings with 2 or more studs at each jamb; support headers on cripple studs.
- J. Exterior walls that run continuously past an abutting interior wall, pre-install insulation, gypsum board and vapor barriers before installing abutting framing so that these items extend continuously through the completed work.

3.04 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

3.05 CARPENTRY

- A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.
- B. Walls: Sill plates are to be securely anchored to foundation walls. Sill plates shall be pressure treated lumber. A sill sealer shall be installed between the foundation walls and the sill plate. Studs shall be single pieces of continuous length. Corner posts shall be constructed to receive interior finish. Studs at door and window opening shall be doubled with inner stud extending from floor plate to underside of lintel and nailed to outer stud. Provide lintels and headers of adequate size for openings. Studs shall be 2 by 4 at interior walls, and 2 by 6 at exterior walls spaced 16 inches on center unless noted otherwise on the drawings. All walls shall have single sill plates and double top plates overlay top plates at intersecting walls. Bottom plates at party walls shall be set on a layer of acoustic sealant. Overlap top plates at intersecting walls. Brace studs in both directions from corners and intermediate wall areas using inset diagonal metal straps. Provide wall sheathing in full panel widths at building corners for bracing. Insulate all corners at framing while framing.

C. Floors:

1. Joists shall be set squarely on bearing plates with adequate bearing surface or securely fastened in joist hangers. Install with crown edge up. Provide solid blocking for joists at joist ends, at mid-point of spans longer than 8 feet and at third points of spans greater than 16 feet. Blocking shall be cut from the same dimension lumber as the joists. Provide joist trimmer and headers at openings in joists. Under partitions parallel to joist provide a double joist. Headers at ceiling locations shall be flush headers unless otherwise indicated. Double headers and trimmers over 4 feet long at floor openings. Use joist hangers for header joists over 6 feet long. Space floor joists 16 inches on center and rafters and ceiling joists at 24 inches on center unless otherwise indicated. Joists shall bear 1-1/2 inches on wood or steel and 3 inches on masonry. Lap ends of joists minimum 4 inches framing from opposite side of beams or partitions. Provide bracing at intermediate spans as necessary. Notches at joist ends shall not exceed 1/4 of the joist depth. Holes shall not exceed 1/3 of the joist depth or be within 2 inches of the top or bottom. Notches shall not exceed 1/6 of the joist depth or be located in the middle third of the span.
2. Subflooring shall be nailed and glued to joists in accordance with APA glued floor system. Subflooring panels shall be installed with long dimension perpendicular to framing. Joints shall be located over framing of 2 inches blocking installed between joists. Stagger joints and allow 1/8 inch at panel ends and edges for expansion/contraction. Sand any joints that swell during construction prior to installing finish flooring. At party walls with separate plates, provide 1 inch gap between rim joists filled with safing insulation. Cut out subfloor over gap before installing walls above so that floor plates are separated.
3. Install underlayment over subfloors where resilient flooring is to be installed. Underlayment shall be installed just prior to installation of resilient flooring. Install using uncoated fasteners which will not stain the finished flooring product. Sand any ridges or thickness swelling of subfloor panels prior to installation of finish flooring to ensure a smooth surface.

- D. Roof: Roof sheathing shall be installed at right angles to roof framing. Locate end joints over supports. Stagger joints. Leave 1/8 inch space between panel edges and ends or as recommended by manufacturer by using panel clips. Nail all panels, staples are not permitted.
- E. Installation of Sheathing: Comply with applicable recommendations contained in "APA Design/Construction Guide - Residential and Commercial", for types of sheathing products and applications indicated. Prime all edges of panels to be exposed outdoors.
- F. Wall Sheathing: Provide sheathing where shown. At fiber cement or vinyl sided walls, provide 1/2 inch wood or sheathing. At walls receiving brick or stucco, provide Glass Mat Faced Gypsum Sheathing. Install sheathing with smooth side towards exterior. Fit boards tightly against each other (do not force) and around openings. Edge joints to occur over studs. Provide solid wood blocking wherever end joints do not bear against framing. Nail or screw to each support in accordance with manufacturer's recommended spacing: At Glass Mat Faced Gypsum Sheathing, use No. 11 gage galvanized roofing nail 1-1/2 inches long, 7/16 inch head spaced 8 inch on center. Screws: attach to wood stud using 1-5/8 inches wood type USG Exterior Screws or corrosion-resistant fasteners, spaced 12 inches on center. Nails or screws should be spaced 3/8 inch from the edge approximately ends of sheathing. Minimum fastener penetration into wood framing is 3/4 inch and into steel framing is 3/8 inch. At Glass Mat Faced Gypsum Sheathing, nail 4 inches o.c. at perimeter and 8 inches at intermediate framing. Sheathing is to be installed flat without noticeable protrusions, gaps, offset joints, deflections or indentations.
- G. Stair Framing: Provide stair framing members of size, space and configuration indicated, or, if not otherwise indicated, as required to support a minimum uniform live load of 100 psf and a minimum concentrated load of 300 pounds applied to an area of 4 square inches at center of tread. Fabricate stair framing members to provide exact fit with treads and risers with no change in dimensions between landings.

- H. Exterior Engineered Columns: Install columns orienting the factory primed ends facing down with the cut end facing up.

3.06 INSTALLATION OF ACCESSORIES AND MISCELLANEOUS WOOD

- A. In areas to be sided, coordinate with the Sider, the installation of a layer of weather-resistive barrier over wall sheathing prior to installation of windows and doors. All windows, doors, and sliding glass doors are to be fully jamb-flashed. Windows and sliding glass doors are to have full pan-flashing draining to the building exterior. All jamb and pan-flashing shall bond to, and be continuous, with the exterior weather barriers.
- B. Install all blocking and nailers as necessary for installation of wood handrails, blinds, shades, casework, cabinetry, shelves, frames, hardware and other accessories.

3.07 INSTALLATION OF CONSTRUCTION PANELS

- A. Subflooring/Underlayment Combination: Glue and nail to framing; staples are not permitted.
- B. Roof Sheathing: Secure panels with long dimension perpendicular to framing members, with ends staggered and over firm bearing.
 - 1. Use sheathing clips between roof framing members.
 - 2. Provide solid edge blocking between sheets.
 - 3. Nail panels to framing; staples are not permitted.
- C. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws, or staples.

3.08 TOLERANCES

- A. Framing Members: 1/4 inch from true position, maximum.
- B. Surface Flatness of Floor: 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.
- C. Surface Flatness of Wall Sheathing: Install wall sheathing flat, within 1/4 inch in a 4 foot radius, free from any notable deflections or indentations.
- D. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

END OF SECTION 06 1000

SECTION 06 1753
SHOP-FABRICATED WOOD TRUSSES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Shop fabricated wood trusses for roof and floor framing.
- B. Bridging, bracing, and anchorage.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Installation requirements for miscellaneous framing.
- B. Section 06 1000 - Rough Carpentry: Material requirements for blocking, bridging, plates, and miscellaneous framing.

1.03 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- B. TPI 1 - National Design Standard for Metal-Plate-Connected Wood Truss Construction; 2014.
- C. BCSI 1 - Building Component Safety Information Booklet: The Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses; joint publication of the Truss Plate Institute and the Wood Trust Council of America
- D. TPI HIB-91 - Commentary and Recommendations for Handling, Installing & Bracing Metal Plate Connected Wood Trusses; Truss Plate Institute; 1991.
- E. WWPA G-5 - Western Lumber Grading Rules; 2011.

1.04 DESIGN REQUIREMENTS

- A. See drawings and applicable codes for structural loading and deflection criteria.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Show truss configurations, sizes, spacing, size and type of plate connectors, cambers, framed openings, bearing and anchor details, and bridging and bracing.
 - 1. Include identification of engineering software used for design.
 - 2. Provide shop drawings stamped or sealed by design engineer licensed in the state which the project is located.
 - 3. Submit design calculations stamped or sealed by Design Engineer licensed in the state which the project is located.

1.06 QUALITY ASSURANCE

- A. Truss Design, Fabrication, and Installation: In accordance with TPI 1, TPI DSB-89, and BCSI 1.
- B. Fabricator Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
- C. Designer Qualifications: Perform design by or under direct supervision of a Professional Engineer experienced in design of this Work and licensed in the state which the project is located.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Handle and erect trusses in accordance with TPI BCSI 1.
- B. Store trusses in vertical position resting on bearing ends.

1.08 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated.

PART 2 PRODUCTS

2.01 TRUSSES

- A. Wood Trusses: Designed and fabricated in accordance with TPI 1 and TPI DSB-89 to achieve structural requirements indicated.
 - 1. Connectors: Steel plate.
 - 2. Structural Design: Comply with applicable code for structural loading criteria.
 - 3. Floor Deflection: 1/480, maximum.
 - 4. Roof Deflection: 1/240, maximum.

2.02 MATERIALS

- A. Lumber:
 - 1. Grade: as required to meet performance requirements
 - 2. Moisture Content: Between 7 and 19 percent.
 - 3. Lumber fabricated from old growth timber is not permitted.
- B. Lumber Grading Rules: WWSA G-5.
- C. Wood Members: Moisture content between 7 and 19 percent
- D. Steel Connectors: Hot-dipped galvanized steel sheet, ASTM A653/A653M Structural Steel (SS) Grade 33/230, with G185/Z550 coating; die stamped with integral teeth; thickness as indicated.
- E. Truss Bridging: Type, size and spacing recommended by truss manufacturer.

2.03 ACCESSORIES

- A. Wood Blocking and Framing for Openings: Softwood lumber, S/P/F species, construction grade, 19 percent maximum and 7 percent minimum moisture content.
- B. Fasteners: Electrogalvanized steel, type to suit application.
- C. Bearing Plates: Electrogalvanized steel.

2.04 FABRICATION

- A. Fabricate trusses to achieve structural requirements specified.
 - 1. Floor trusses shall be 16 inches deep.
- B. Brace wood trusses in accordance with TPI DSB-89 and BCSI 1.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that supports and openings are ready to receive trusses.
- B. Install trusses in accordance with manufacturer's instructions and TPI DSB-89 and TPI BCSI 1; maintain a copy of each TPI document on site until installation is complete.
- C. Set members level and plumb, in correct position.
- D. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure plumb, and in true alignment until completion of erection and installation of permanent bracing.
- E. Do not field cut or alter structural members without approval of Owner.
- F. Install permanent bridging and bracing.
- G. Install headers and supports to frame openings required.
- H. Frame openings between trusses with lumber in accordance with Section 06 1000.
- I. Frame openings between trusses with lumber in accordance with Section 06 1000.
- J. Coordinate placement of decking with work of this section.
- K. After erection, touch-up galvanized surfaces with zinc primer.

3.02 TOLERANCES

- A. Framing Members: 1/2 inch maximum, from true position.

END OF SECTION

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SECTION 06 2000
FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Furnish and install the following finish carpentry items:
 - 1. Cabinets and casework.
 - 2. Interior trim including: Base, casing, sills, rails, caps, and moldings.
 - 3. Plastic wall paneling.
- B. Hardware and attachment accessories.
- C. Installation of access panels at bathtubs and attics.
- D. Products installed but not supplied under the Work of this Section:
 - 1. Residential casework (cabinets).
 - 2. Fire extinguishers and cabinets.
 - 3. Storage shelving.
 - 4. Toilet, bath, and laundry accessories.

1.02 RELATED SECTIONS

- A. Section 06 1000 - Rough Carpentry.
- B. Section 07 4640 - Vinyl and Polymer Siding.
- C. Section 08 1416 - Wood Doors.
- D. Section 09 9000 - Painting and Coating: Painting and finishing of finish carpentry items.
- E. Section 10 2800 - Toilet, Bath and Laundry Accessories.
- F. Section 10 4416 - Fire Extinguishers, Cabinets and Accessories: Fire Extinguishers.
- G. Section 10 5615 - Wire Storage Shelving.
- H. Section 12 3530 - Residential Casework: Shop fabricated cabinet work.

1.03 REFERENCE STANDARDS

- A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.
- B. PS 20 - American Softwood Lumber Standard; 2010.
- C. FSC-US; Forest Stewardship Council - Certified Products, www.findfsc.org.
- D. WMMPA WM Series - Softwood Moulding Patterns catalog; current edition.
- E. ANSI A208.1 - American National Standard for Medium Density Fiberboard for Interior Use; current edition.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Samples: Submit two samples of millwork 6 inch long.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with AWI Architectural Woodwork Quality Standards Illustrated, Custom grade.
- B. Grade materials in accordance with the following:
 - 1. Lumber Grading Agency: Certified by ALSC.
 - 2. Plywood: Certified by the American Plywood Association.
 - 3. Hardwood Lumber Grading: NHLA Grading Rules.
- C. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect work from moisture damage.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

- A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI/AWMAC/WI Architectural Woodwork Standards for Premium Grade.
- B. Wood-Based Components
 - 1. Wood fabricated from old growth timber is not permitted.

2.02 SHEET MATERIALS

- A. Softwood Plywood:
 - 1. Interior: APA Grade A-B; veneer core; spruce-pine-fir face species, rotary cut.
- B. Medium Density Fiberboard (MDF): ANSI A208.2, Grade MD:
 - 1. Density 48 - 16/cu. ft.
 - 2. Do not use MDF that contains added urea formaldehyde.

2.03 COMPONENTS

- A. Interior Standing and Running Trim; Casings, Base, Stair Skirts, and Other Trim:
 - 1. Casings, base, stop to have "Princeton" profile.
 - a. Casing to be 7/16 inch x 2-1/4 inches similar to Trimpac T326.
 - b. Base to be 3/8 inch x 3-1/2 inches similar to Trimpac T637.
 - 2. Under-cap stop to be 3/8 inch x 1 1/4 inches.
 - 3. Stair skirts to be 7/16 inch x 9-1/4 inches similar to Ferche 996.
- B. Handrails and Wall Caps:
 - 1. Prefinished oak, oval 1 1/4 inches x 2 1/4 inches similar to Ferche 904 with Ives 059/59A (brushed aluminum) mounting brackets. Minimum bracket spacing of 32" o.c.
 - 2. Wall caps to be clear oak 3/4 inches (nominal) thickness. Prefinish to match color of interior doors.

2.04 FASTENINGS

- A. Provide nails, screws and other anchoring devices of type, size, material and finish suitable for intended use and required to provide secure attachment, concealed where possible. Hot-dip galvanize fasteners for work exposed to exterior and high humidity to comply with ASTM A153.

2.05 ACCESSORIES

- A. Lumber for Shimming, Blocking, and furring: Softwood lumber of species specified in Section 06 1000, for blocking and furring, etc..
- B. Primer: Alkyd primer sealer.
- C. Wood Filler: Solvent base, tinted to match surface finish color.

2.06 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.

2.07 FINISHING

- A. Apply wood filler in exposed nail and screw indentations.
- B. Field finish all materials in accordance with finish specified and Section 09 9000 - Painting and Coating.
- C. Seal internal surfaces and semi-concealed surfaces. Brush apply only.
- D. Prime paint surfaces in contact with cementitious materials.
- E. Back prime woodwork items to be field finished, prior to installation.

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 work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards 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. Do not use additional overlay trim to conceal larger gaps.
- D. Install base at all walls of interior rooms (except garage). Install casing at jambs and head of all doors. Install cast sill at all windows.
- E. Anchor finish carpentry work securely to supports and substrates, using concealed fasteners and blind nailing where possible. Use fine finishing nails for exposed nailing except as indicated, countersunk and filled flush with finished surface. Make exterior joints water resistant by careful fitting. Use double dipped galvanized nails to nail exterior trim. Exterior trim to be pre-primed on all sides. Prime end cuts during installation. Finish work shall be free of defects including hammer marks. Exposed edges shall be coped and mitered. Miter and return handrail ends to the wall.
- F. Installation of Standing and Running Trim:
 - 1. Install with minimum number of joints possible, using full-length pieces from maximum length of lumber available. Cope at returns, miter at corners to produce tight fitting joints. Use scarf joints for end-to-end joints.
 - 2. Stair handrails to have mitered corners to return to wall. Mounting brackets to be 6" to 8" from ends of handrail and intermediate brackets 32" o.c. maximum. All corners and fasteners to be smooth.
- G. Installation of cabinets includes all accessory items including fillers, scribes, end panels, face panels, base trim, trim under overhangs and molding at top of upper wall cabinets.

3.03 PREPARATION FOR SITE FINISHING

- A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.
- B. Site Finishing: See Section 09 9000 - Painting and Coating.
- C. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

3.04 TOLERANCES

- A. Maximum Variation from True Position: 1/16 inch.
- B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

END OF SECTION 06 2000

SECTION 07 1416
COLD FLUID-APPLIED WATERPROOFING SYSTEM

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Cold fluid-applied waterproofing system
 - 2. Protection courses (Type 1 and 2)
 - 3. Warning/protection course
 - 4. Rigid insulation (waterproofing related)
 - 5. Structural mortar
 - 6. Slip sheet
- B. Related Sections:
 - 1. Section 01 9100 - Green Building Requirements: Low VOC requirements for adhesives.
 - 2. Section 03 3000 - Cast-in-Place Concrete.
 - 3. Section 03 3900 - Concrete Curing.
 - 4. Section 04 2731 - Reinforced Unit Masonry.
 - 5. Section 33 46 00 - Subdrainage (filter fabric, rounded drainage aggregate).

1.02 REFERENCE STANDARDS

- A. The following standards and publications are applicable to the extent referenced in the text.
- B. American Society for Testing and Materials (ASTM)
 - 1. Standard Test Methods for Water Vapor Transmission of Materials
 - 2. Standard Test Methods for Fire Tests of Roof Coverings
 - 3. Standard Test Methods for Color and Color-Difference Measurements by Tristimulus (Filter) Colorimetric
 - 4. Practice for Operating Light-Exposure Apparatus (Zenon-Arc Type) with and without Water for Exposure of Nonmetallic Materials

1.03 SUBMITTALS

- A. Comply with Submittal Procedures section
- B. Product Data: Submit printed product data from the manufacturer including substrate preparation and installation procedures for all waterproofing system and all other products in this Section.
- C. Shop Drawings: The Drawings were based on Neptune Coatings Wetsuit waterproofing system. If the Contractor proposes deviations from the Drawings, or if one of the other pre-approved waterproofing systems is selected for installation, then and only then are shop drawings required. If shop drawings are submitted when not required, they will be returned without review or approval and will not become part of the Documents. Required shop drawings shall include at least the same detailed conditions as shown on the Drawings and shall be approved by the manufacturer before they are submitted to the Owner.
- D. Samples: Submit clearly labeled samples of the following:
 - 1. Cold fluid-applied waterproofing membrane
 - 2. Reinforcing sheet
 - 3. All other waterproofing accessory products
 - 4. Protection courses (Type 1 and 2)
 - 5. Root barrier/protection course
 - 6. Warning/protection course
- E. Proof of Quality Assurance Compliance (refer to Quality Assurance):
 - 1. Installer Certification: Submit a written statement, signed by the manufacturer, verifying that installer complies with the requirements specified herein.
 - 2. Installer Experience: Submit documentation, signed by the installer, that shows compliance with requirements specified herein.

3. Foreman/Crew Qualification: Submit a written statement and list of previous projects, signed by the installer, verifying that the installer complies with the requirements specified herein.
4. Installer Copied: Submit a copy of transmittals used to send to the installer a set of the Documents and the manufacturer's installation instructions.
5. Sample of Manufacturer's Warranty: Submit a sample of the manufacturer's warranty which complies with requirements herein.
6. Documentation Photos: Submit by email or CD, all photo documentation required herein.

1.04 QUALITY ASSURANCE

- A. Installer Certification: The installer shall be a single company who has been trained and who is currently certified by the waterproofing manufacturer to install their products.
- B. Installer Experience: The installer shall have successfully completed at least two projects using waterproofing products of the same manufacturer as is specified herein.
- C. Foreman/Crew Qualifications: The lead foreman shall have a minimum of two years experience on a minimum of two projects of comparable size and complexity. The lead foreman shall be on site for the duration of the waterproofing installation. The crew shall also have experience installing the specified waterproofing system.
- D. Equipment: When product is spray applied, all spray equipment shall be supplied and/or approved by the waterproofing manufacturer.
- E. Installer Copied: Send two sets of Contract Documents and two copies of the manufacturer's installation instructions to the installer.
- F. Source Limitations: Obtain waterproofing system related products specified in this Section through one source, from a single manufacturer.
- G. Product Responsibility: Installation of all products contained in this Section shall be the responsibility of the waterproofing installer to ensure undivided responsibility.
- H. Pre-Installation Conference: Conduct a pre-installation conference at the Project site and include the Contractor, waterproofing installer, Owner, and Owner's representative. The Contractor shall provide advance notice to all attendees. The conference agenda shall include, but not necessarily be limited to the following:
 1. Review required submittals.
 2. Tour areas of the Work.
 3. Sequence of installation and construction schedule.
 4. Substrate conditions.
 5. Required testing.
 6. Pre-detailing/special details
 7. Coordination of other trades.
 8. Manufacturer's guidelines with respect to weather.
 9. Observation procedures.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store materials for waterproofing work in accordance with the manufacturer's recommendations, as approved, and in accordance with the requirements herein specified.
- B. Deliver materials in manufacturer's unopened containers, fully identified with brand, type, class, grade, and all other qualifying and product information.
- C. Do not allow stored materials to freeze.
- D. Keep materials sealed until ready for use.
- E. Protect materials during handling and application to prevent damage or contamination.
- F. Materials which are determined damaged by the Owner's representative are to be removed from the site and replaced at no cost to the Owner.

1.06 PROJECT CONDITIONS

- A. Structural Capacity: Do not overload structure during application and storage.
- B. Unforeseen Conditions: If unusual or concealed conditions are discovered, stop work and immediately notify, in writing, the Owner's representative and membrane manufacturer.
- C. Odors: Take necessary precautions when working around air in-takes. Odors could be a disturbance to the Owner and building occupants. It is the installer's responsibility to coordinate equipment to be turned off and on with the Owner if necessary.
- D. Weather Conditions:
 - 1. Do not apply waterproofing in rain, snow, mist, or fog.
 - 2. Do not apply waterproofing if the ambient temperature, substrate temperature, or relative humidity does not meet the manufacturer's requirements.
 - 3. Do not proceed with waterproofing when weather forecasts are unfavorable.

1.07 WARRANTY

- A. Manufacturer's Warranty: Submit to the Owner for transmittal to the Owner, two copies of the manufacturer's 10 year material warranty.
- B. Installer's Warranty: Submit to the Owner for transmittal to the Owner, two copies of an unqualified warranty for a period of 5 years on all materials, workmanship, and watertightness, signed by the waterproofing installer and the Contractor. Defects in the installation because of materials or workmanship shall be properly corrected during the warranty period at not cost to the Owner. Upon written notification within the warranty period of any such defects, the necessary repairs and replacement shall be properly made at the convenience of the Owner.

PART 2 - PRODUCTS

2.01 COLD FLUID-APPLIED WATERPROOFING SYSTEM

- A. Approved Manufacturers: The following are subject to compliance with requirements herein.
 - 1. Grace Construction Products (Procor 75 and Procor Composite Membrane); 62 Whittemore Avenue, Cambridge, MA 02140.
 - 2. Neptune Coatings Corp (Wetsuit/Trowel and Seal)
- B. Membrane System (Reinforced):
 - 1. Reinforced membrane system (cold applied) with the following characteristics:
 - a. Thickness: 120 dry mils minimum, excluding reinforcing sheet
 - b. Flame spread, ASTM E108: Class A
 - c. Flame exposure, ASTM E108: Class A
 - d. Water vapor permeability, ASTM E96: 0.26 perms
 - e. Water vapor transmission, ASTM E96: 0.182 grains
 - f. Ponding: No effects after two months
 - g. Accelerated weathering, 1,000 hours/7 years, ASTM G26: No adverse effects
 - h. Volatile organic compounds (VOC): 0
 - i. Fluid component (cold fluid-applied material)
 - 1) Procor 75 (two part spray): Synthetic rubber, cold vulcanized membrane by Grace Construction Products.
 - 2) Wetsuit (one or two-part spray): Neoprene rubber, water based, solvent free material by Neptune Coatings.
 - j. Reinforcing sheet:
 - 1) For use with Procor 75: Fabric sheet (not a fluid) as recommended by Grace Construction Products.
 - 2) For use with Wet Suit: Invisilink Tietex T272 soft finished, stitch bonded, polyester mesh by Neptune Coatings.
- C. Membrane System (non-reinforced):
 - 1. Thickness: 80 dry mil minimum
- D. Pre-Detailing Membrane:

1. For use with Procor 75: Procor 75 or 20 by Grace Construction Products
2. For use with Wet Suit: 40 wet mil thick, Wet Suit (one part) or Trowel and Seal, by Neptune Coatings.

2.02 PROTECTION COURSE

- A. For use with Wetsuit and Procor 75:
 1. PC-2 by W.R. Meadows
 2. Approved equal

2.03 WARNING/PROTECTION COURSE

- A. Stainless steel expanded metal, minimum 12-gauge thickness
- B. Approved equal

2.04 RIGID INSULATION (WATERPROOFING RELATED)

- A. General: Extruded polystyrene insulation, ASTM C578, thickness and compressive strength as shown on the Drawings. Insulation shall be fluted in order to be self-draining. Insulation shall not be warped or bowed.
- B. Acceptable Manufacturers: Subject to compliance with requirements, provide products for the entire Project by one of the following.
 1. Dow
 2. Owens Corning
 3. T-Clear
 4. Diversifoam
 5. Amoco
 6. Approved equal
- C. Adhesives: Compatible with waterproofing protection course and extruded foam.

2.05 STRUCTURAL MORTAR

- A. Accelerated setting, low slump, high strength mortar for substrate preparation and patching.
 1. Thoroc HBA by Chemrex, distributed by Simplex
 2. Five Star structural concrete V/O by Five Star Products
 3. Approved equal

2.06 SLIP SHEET

- A. 6-mil clear or opaque white polyethylene sheets. Sheets shall be as large as possible.

2.07 FOUNDATION AND INSULATION PROTECTION LINER

- A. Product: GroundBreaker as manufactured by NUDO: www.nudo.com.
- B. Fiberglass reinforced plastic barrier with minimum thickness of 0.060 inches.
- C. Finish: Pebbled Gray.

PART 3 - EXECUTION

3.01 GENERAL

- A. Work performed under this Section shall be in accordance with the Contract Documents, and the manufacturer's recommendations. In the event of conflict, the stricter requirement shall prevail.
- B. Prior to onset of waterproofing work, the waterproofing installer shall inspect the entire area to be waterproofed. Defects and improper conditions affecting installation shall be brought to the attention of the Contractor in writing for correction before proceeding.

3.02 PROTECTION

- A. Protect finish surfaces from damage resulting from spillage, dripping, and dropping of materials. Prevent waterproofing materials from entering or clogging drains and water conductors. Repair and restore or replace other work which is soiled or damaged in connection with performance of the waterproofing work.

3.03 SUBSTRATE PREPARATION

- A. New Concrete and Masonry:
 - 1. Use torches if additional surface drying is necessary.
 - 2. Remove form release agents or curing compounds (if present) by abrasive-blast, grinding, or other appropriate means, or it shall be approved in writing by the waterproofing manufacturer to remain.
 - 3. Repair or patch substrate spalls, voids, cracks, or honeycombs with structural mortar.
 - 4. Remove projections, fins, or "flash" from form board joints leaving a uniform surface. No coarse aggregate shall be exposed.
 - 5. Remove grease, oil, dust, dirt, or other contaminants or debris from substrate.
 - 6. Thoroughly clean opposing faces of expansion joints.

3.04 PRE-DETAILING

- A. General:
 - 1. Refer to the Drawings for pre-detailing details.
 - 2. Pre-detailing shall precede system membrane application.
 - 3. All pre-detailing components shall be fully bonded to one another.
- B. Construction Joints, Cracks, or Board Joints (1/8" to 1/4"):
 - 1. Centered on the joint or crack, sandwich a 6" wide strip of reinforcing sheet between two 8" wide, 40 wet mil layers of the one-part fluid component.
 - 2. The edges of the two fluid components shall be well bonded together so as to seal off the reinforcing sheet.
- C. Construction Joints, Cracks, or Board Joints (greater than 1/4"):
 - 1. Contact waterproofing membrane manufacturer.
- D. Expansion Joints (1-1/2" or less)
 - 1. Install expansion joint system into the joint.
 - 2. Centered on the joint, sandwich a strip of reinforcing sheet (6" wide plus joint width) between two 40 wet mil layers of the one-part fluid component (8" wide plus joint width).
 - 3. The edges of the two fluid components shall be well bonded together so as to seal off the reinforcing sheet.
- E. Expansion Joints (greater than 1-1/2"):
 - 1. Contact waterproofing membrane manufacturer.
- F. Inside and Outside Corners:
 - 1. Follow same procedure as described for construction joints and cracks while centering detail on the corner.
- G. Penetrations:
 - 1. If there is any movement between the pipe and the structure, stabilize the pipe with structural mortar or other appropriate means.
 - 2. Apply a 40 wet mil layer of the one-part fluid component 4" up the pipe and 4" out onto the structure.
 - 3. Cut a doughnut shaped target piece of the reinforcing sheet having an undersized hole and slip it down over the pipe, including it into the fluid component. The reinforcing sheet should extend up the pipe about 3/4 inch.
 - 4. Sandwich the reinforcing by applying a second 40 wet mil layer of the one-part fluid component.
 - 5. When the membrane system is installed over the pre-detailing, a cant should be built up around the base of the pipe.

3.05 MEMBRANE SYSTEM APPLICATION

- A. General:
 - 1. Stir materials during application in accordance with manufacturer's instructions to avoid product separation.

2. Spray fluid component as a continuous, monolithic and seamless membrane of uniform thickness, beginning at the lowest point and terminating at the highest point.
 3. When a spot repair or unusually thick application is required, recoat only after the first 60 mil layer has cured.
- B. Horizontal Application (reinforced):
1. Apply one 60 wet mil layer of the one-part fluid component covering all areas to be waterproofed including all pre-detailing.
 2. Embed the reinforcing sheet into the fluid component by gently rolling it into place.
 3. Apply one layer of either the one-part fluid component (80 wet mil) or the two-part fluid component (60 dry mil) over the reinforcing
- C. Vertical Application (non-reinforced):
1. Apply one layer of either the one-part fluid component (100 wet mil) or the two-part fluid component (80 dry mil).

3.06 PROTECTION COURSE

- A. General:
1. Install the protection course immediately after membrane system application.
 2. Adhere the protection course to the membrane system. Do not mechanically fasten through the waterproofing.
 3. Extend the protection course over the entire membrane system for continuous, uninterrupted protection. Lap sheet type protection course minimum 2 inches.
- B. Adhering:
1. When the top layer of the membrane system is the one-part fluid component, simply embed the protection course into the fluid component before it is fully cured.
 2. When the top layer of the membrane system is the two-part fluid component (which cures within a few seconds), apply an additional "tack coat" of the one-part to serve as an adhesive for the protection course.

3.07 EXTRUDED POLYSTYRENE INSULATION

- A. Maximum moisture content of insulation at time of application to be 4 percent of dry weight.
- B. Install insulation boards so that drainage flutes are vertical.
- C. Adhere to waterproofing protection course with mastic compatible with protection course material and foam insulation.

3.08 SLIP SHEET

- A. Install sheets loose laid and draped down walls to be backfilled. The intent is to eliminate the "draw down" effect that backfilling and compaction has on the installed wall materials. Overlap seams 12" minimum. Do not permanently attach.

3.09 FOUNDATION INSULATION PROTECTION LINER

- A. Install foundation protection liner per manufacturer's directions. Adhere with mastic that is compatible with foam insulation and protection liner.
- B. Extend liner below grade as indicated on the drawings.
- C. Install accessory trim components.
- D. Coordinate liner installation with other trades so that it is not damaged during subsequent construction and so that water drains shingle fashion from water shedding elements above.

3.10 FIELD QUALITY CONTROL

- A. General: Monitor the installation of the final layer of Work under this Section as well as any subsequent overburden or backfill installation to assure no damage is done to the waterproofed areas.
- B. Photographic Documentation: Take field quality control photographs of areas to receive waterproofing before the start of work; during surface preparation, pre-detailing, and membrane system application; and at completion of the work.

3.11 ADJUSTMENTS

- A. Repairs: Repair damaged installation in accordance with waterproofing manufacturer's instructions.

3.12 CLEANING

- A. All debris associated with this Section shall be removed and disposed of in an appropriate manner.

END OF SECTION 07 1416

SECTION 07 2100 THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Board insulation at cavity wall construction, perimeter foundation wall, and underside of floor slabs on grade at building perimeter.
- B. Board insulation in voids at exterior wall opening headers.
- C. Batt insulation and vapor retarder in exterior wall and ceiling (cavity) construction. Note: "High Density" batts, standard.
- D. Foam-in-place insulation at rim joists at exterior walls, party walls, and unit-to-garage walls.
- E. Foam-in-place insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.
- F. Attic access hatch.

1.02 RELATED SECTIONS

- A. Section 01 9100 - Green Building Requirements: Energy Star rated verified installation
- B. Section 06 1000 - Rough Carpentry: Supporting construction for batt insulation.
- C. Section 07 2126 - Blown Insulation: Blown fiberglass insulation for roofs and ceilings.
- D. Section 07 2500 - Vapor Retarders and Air Barrier: Separate vapor retarder materials.
- E. Section 07 8400 - Firestopping: Fire stopping sealant and safing insulation.
- F. Section 09 2116 - Gypsum Board Assemblies.
- G. Products installed but not specified under this Section:
 - 1. Safing Insulation: See Section 07 8400 - Firestopping.

1.03 REFERENCE STANDARDS

- A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2015a.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- C. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C; 2012.

1.04 PERFORMANCE REQUIREMENTS

- A. Fire Performance: Provide insulation with fire performance characteristics indicated per ASTM E119, ASTM E84 and E136, as applicable, and which correspond to products listed in UL "Fire Resistance Directory" or "Building Materials Directory".
- B. System Description: Work in this Section shall provide a thermal, vapor and air barrier at building enclosure elements.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.
- C. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

1.06 SEQUENCING

- A. Sequence work to ensure fireproofing and firestop materials are in place before beginning work of this section.

1.07 COORDINATION

- A. Coordinate the work with Section 07 2500 for installation of vapor retarders.

PART 2 PRODUCTS

2.01 APPLICATIONS

- A. Insulation Under Concrete Slabs: Extruded polystyrene (XPS) board.
- B. Insulation at Perimeter of Foundation: Extruded polystyrene (XPS) board.
- C. Insulation to fill voids at opening headers at exterior walls: Extruded polystyrene (XPS) board.

2.02 FOAM BOARD INSULATION MATERIALS

- A. Expanded Polystyrene Board Insulation: ASTM C 578; with the following characteristics:
 - 1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
 - 2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
 - 3. 6" total thickness of insulation at Attic Access Hatch
 - a. Laminate 1 layers of 5/8" Type 'X' gypsum board to finished ceiling side of hatch.
 - 4. Substitutions: See Section 01 6000 - Product Requirements for substitution procedures.
- B. Type 1 - Exterior Foundation, Below Slab, Extruded Polystyrene Board Insulation: ASTM C 578, Type IV; Extruded polystyrene board with either natural skin or cut cell surfaces; with the following characteristics:
 - 1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
 - 2. Flame Spread Index: 75 or less, when tested in accordance with ASTM E84.
 - 3. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
 - 4. Board Size: Largest size possible for application and thickness indicated.
 - 5. Board Thickness: As indicated on the drawings.
 - 6. Insulation board below grade at foundation: Self-draining type with flutes.
 - 7. Thermal Resistance: 5.0 "R" value minimum per inch of thickness at 75 degrees F mean temperature.
 - 8. Compressive Resistance: 60 psi minimum.
 - 9. Board Density: 1.9 lb/cu ft minimum.
 - 10. Water Absorption, maximum: 0.1 percent, by volume.
 - 11. Acceptable Manufacturers:
 - a. Minnesota Diversified; "CERTIFOAM"; www.diversifoam.com.
 - b. Amoco Foam Products Company; "AMOFOAM-CM".
 - c. Dow Chemical Co; "STYROFOAM SM": www.dow.com/styrofoam/na.
 - d. Owens Corning; "FOAMULAR"; www.owenscorning.com.
 - 12. Substitutions: See Section 01 6000 - Product Requirements for substitution procedures.
- C. Type 2 - Interior Foundation use and for use in Conjunction with Furring and Gypsum Board and attic access hatch, Extruded Polystyrene Board Insulation: ASTM C 578, Type X; Extruded polystyrene board with either natural skin or cut cell surfaces; with the following characteristics:
 - 1. Board Size: Largest size possible for application and thickness indicated.
 - 2. Board Thickness: As indicated on the drawings.
 - 3. Thermal Resistance: 5.0 "R" value minimum per inch of thickness at 75 F degrees mean temperature.
 - 4. Compressive Resistance: 15 psi minimum.
- D. Concrete Faced Insulated Perimeter Wall Panels
 - 1. Sizes - Width and length: 2'x4'
 - 2. Edge Treatment: Tongue and groove along the 4' edge
 - 3. Thickness: 2.3125" for 2" foam
 - 4. Thermal Resistance per inch: R5.0
 - 5. Foam Compressive Strength: 40psi
 - 6. Water Absorption: 0.1% by volume, max.
 - 7. Acceptable Manufacturers: T. Clear Corporation, Wall Guard

2.03 BATT INSULATION MATERIALS

- A. Batt Insulation: ASTM C 665; preformed batt; friction fit, conforming to the following:
 - 1. Material: Glass fiber, High-Density (enhanced R value) batts.

2. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
3. Formaldehyde Content: Zero.
4. Thickness: R-value of the insulation shall be R-21 in walls.
5. Facing: Unfaced, except where not backed by vapor retarder, provide batts with unreinforced kraft facing on one side.
6. Acceptable Manufacturers:
 - a. Owens Corning Corp: Product "EcoTouch"; www.owenscorning.com.
 - b. Knauf Insulation: Product "EcoBatt"; www.ecobatt.us.
 - c. Substitutions: 01 2513 - Product and Substitution Procedures.

2.04 FOAM-IN-PLACE INSULATION MATERIALS (AT RIMS)

- A. Isocyanurate or closed-cell polyurethane foam with flame spread under 25 and smoke developed under 450, R-Value over 4 per inch, shall contain no formaldehyde.
- B. Install thickness to achieve R-21 at all joints, gaps, and cracks.
- C. Install thickness as shown on drawings at roof heel locations.]

2.05 FOAM-IN-PLACE INSULATION (FOR SEALING WINDOWS AND DOOR PERIMETERS, GAPS, CRACKS, FRAMING PENETRATIONS OF WIRES, PIPES, DUCTS, VENTS, OR CONDUIT).

- A. "Great Stuff Pro" Window and Door low-expansion one part foam by Dow Chemical Company.

2.06 ACCESSORIES

- A. Sheet Vapor Retarder: Specified in Section 07 2500 - Vapor Retarders.
- B. Insulation Fasteners: Impaling clip of unfinished steel with washer retainer and clips, to be adhered to surface to receive insulation, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place.
- C. Nails or Staples: Steel wire; electroplated or galvanized; type and size to suit application.
- D. Adhesive: Type recommended by insulation manufacturer for application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation and adhesive.
- B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.
- C. Verify insulation boards are unbroken, free of damage, with face membrane undamaged.
- D. Verify mechanical, electrical and other systems within walls that have been installed and tested.

3.02 BOARD INSTALLATION AT EXTERIOR FOUNDATION PERIMETER

- A. Comply with insulation manufacturer's instructions for installation of insulation. Support insulation units by adhesive or mechanical anchorage or both as applicable to location and conditions indicated.
- B. Install boards horizontally on foundation perimeter.
 1. Place boards to maximize adhesive contact.
 2. Install in running bond pattern.
 3. Butt edges and ends tightly to adjacent boards and to protrusions.
- C. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
- D. Immediately following application of board insulation, place protective boards over exposed insulation surfaces.

3.03 BOARD INSTALLATION UNDER CONCRETE SLABS

- A. Place insulation under slabs on grade after base for slab has been compacted.
- B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

- C. Prevent insulation from being displaced or damaged while placing vapor retarder and placing slab.

3.04 FOAM-IN-PLACE INSULATION (AT RIMS)

- A. Install foam-in-place insulation to a depth of 2" minimum or to attain indicated R-values (which ever is greater) at the following locations:
 - 1. At rim joists of all exterior walls.
 - 2. Pipe, conduit, duct, wiring penetrations extending in exterior walls between floors or at unit separation walls.

3.05 BATT INSTALLATION

- A. Install insulation in accordance with manufacturer's instructions.
- B. Install in exterior wall, roof, and ceiling spaces without gaps or voids. Do not compress insulation.
- C. Insulation at unit separation walls: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions. Install without gaps or voids. Do not compress insulation.
- D. Install in floor/ceiling joist assemblies at party walls between units and around penetrations in top plates at the attic level.
- E. Fill voids in framing at door and window frames, lintels, headers, blocking and other exterior wall and party wall void locations. Secure insulation in place as necessary.
- F. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- G. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

3.06 FOAM-IN-PLACE INSULATION (AT WINDOWS, DOORS, AND FRAMING PENETRATIONS)

- A. Install insulation in all small cracks, voids, and gaps around doors and windows and around electrical outlets of exterior walls, and at all pipe, conduit, duct and wiring penetrations extending in walls between floors or at party walls.
- B. Mask or protect all windows and all finish materials in area being foamed. Clean up all overspray and out-of-cavity expanded foam.

3.07 FIELD QUALITY CONTROL

- A. Notify the Owner when work is ready to inspect (prior to backfilling and covering with gypsum board).
- B. Owner review and approval of rim joist insulation installation is required prior to installation of interior gypsum board at ceilings and walls. Contractor shall notify Owner when installation of rim joist insulation is complete and ready for review. Schedule Owner review in a timely fashion. Review shall be made of an entire completed 2 sides of building - 1 with joists bearing on wall and 1 where joists are parallel to wall.

3.08 PROTECTION OF FINISHED WORK

- A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION 07 2100

SECTION 07 2126 BLOWN INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Ceiling and Attic: Loose insulation pneumatically placed and poured into joist spaces through access holes.

1.02 RELATED SECTIONS

- A. Section 07 2100 - Thermal Insulation.
- B. Section 07 2500 - Vapor Retarders and Air Barrier.

1.03 REFERENCE STANDARDS

- A. ASTM C739 - Standard Specification for Cellulosic Fiber Loose-Fill Thermal Insulation; 2021a.
- B. ASTM C764 - Standard Specification for Mineral Fiber Loose-Fill Thermal Insulation; 2019.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, limitations, and _____.
- C. Manufacturer's Installation Instructions: Indicate procedure for preparation and installation.
- D. Certificates: Certify that products of this section meet or exceed specified requirements.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Applications: Provide blown insulation in attic, exterior walls, and ceiling as indicated on drawings.
- B. Loose Fill Insulation: ASTM C 739, cellulose fiber type, nodulated for pour and bulk for pneumatic placement.
 - 1. Installed Thickness: Sufficient to provide R-49 at attics, unless thickness is otherwise indicated on drawings.
 - 2. Acceptable manufacturers:
 - a. Advanced Fiber Technology; Product Loose Fill Cellulose Insulation: www.advancedfiber.com.
 - b. Applegate Insulation; Product BoraSpray: www.applegateinsulation.com.
 - c. Central Fiber Corporation; Product CLEAN: www.centralfiber.com.
 - d. Nu-Wool Insulation; Product Premium Cellulose Insulation: www.nuwool.com.
 - e. Champion Insulation; Product Weather Blanket: www.championinsulation.com.
 - f. Substitutions: See Section 01 6000 - Product Requirements for Substitution Procedures.
- C. Ventilation Baffles: Formed Recycled plastic.
- D. Depth Gauges: Printed depth indicators on paper or plastic (to show depth of insulation in inches).

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation are dry and ready to receive insulation.
- B. Verify that light fixtures have thermal cut-out device to restrict over-heating in soffit or ceiling spaces.
- C. Verify spaces are unobstructed to allow placement of insulation (see Section 07 2100 - Thermal Insulation).
- D. Install depth gauges permanently at locations visible from attic hatch. Staple to wood framing members.

3.02 INSTALLATION

- A. Install insulation and ventilation baffle in accordance with ASTM C1015 and manufacturer's instructions.
- B. Place insulation pneumatically to completely fill rafter spaces to a density of _____.
- C. Place insulation against baffles. Do not impede natural attic ventilation to soffit.
- D. Completely fill intended spaces. Leave no gaps or voids.

3.03 CLEANING

- A. Remove loose insulation residue.

END OF SECTION

SECTION 07 2500
VAPOR RETARDERS AND AIR BARRIER

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Vapor Retarders: Materials to make exterior walls, joints between exterior walls and roof, and joints around frames of openings in exterior walls water vapor-resistant and air tight.
- B. Vapor Retarders: Materials to make concrete slabs-on-grade, pipe and other penetrations and joints to surrounding construction water vapor resistant.

1.02 RELATED SECTIONS

- A. Section 07 2100 - Thermal Insulation: Vapor retarder installed in conjunction with batt insulation.
- B. Section 07 2620 - Under-Slab Vapor Retarder.
- C. Section 26 0000 - Electrical- Design-Build: Sealed junction boxes.

1.03 REFERENCE STANDARDS

- A. ASTM D882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting, 2012.
- B. ASTM D1709 - Standard Test Methods for Impact Resistance of Plastic Film by the Free-Falling Dart Method, 2016.
- C. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2014.
- D. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2011.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on material characteristics.
- C. Manufacturer's Installation Instructions: Indicate preparation.

1.05 QUALITY ASSURANCE

- A. Vapor Permeability (Perm): Measure in accordance with ASTM E 96 Procedure E.

PART 2 PRODUCTS

2.01 VAPOR RETARDER MATERIALS - WALLS AND CEILINGS

- A. Vapor Retarder Sheet: ASTM D 4397 polyethylene film, clear.
 - 1. Thickness: 6 mil exterior walls and ceilings below insulated attics and roofs.
 - 2. Water Vapor Permeance: As required by referenced standard for thickness specified.
 - 3. Vapor Permeability (Perm): 0.13 perm rating, conforming to voluntary product standard PS17.
- B. Vapor Retarder Tape: Polyethylene self-adhering type, 2 inches wide, compatible with sheet material.

2.02 VAPOR RETARDER MATERIALS - UNDER SLAB

- A. Vapor Retarder Sheet: ASTM D 4397 polyolefin resin.
 - 1. Thickness: ACI 302.1R, not less than 15 mil.
 - 2. Classification: ASTM E 1745, meet or exceed Class A.
 - 3. Transmission Rate: ASTM E96, 0.018 Grain/Hr•Ft²•in.Hg.
 - 4. Transmission Rate: ASTM E96, 0.007 WRTR or lower.
 - 5. Impact Resistance: ASTM D1709. 2,266grams
 - 6. Tensile Strength: ASTM D882. 70.6lbf/in.
- B. Manufacturers:
 - 1. Stego Industries; Stego Wrap Vapor Barrier (15 mil): www.stegoindustries.com.
 - 2. Reef Industries; Griffolyn 15 Mil Green: www.reefindustries.com.

3. Inteplast Group; Barrier-Bac VB-350 16 mil by Barrier-Bac, Inc: www.barrierbac.com.
 4. Raven Industries; VaporBlock VB 15 or VB Plus 20: www.ravenfd.com.
- C. Vapor Retarder Tape: High Density Polyethylene Tape with pressure-sensitive adhesive. Minimum width 4 inches, ASTM E96, 0.3 perms or lower.
 - D. Vapor Proofing Mastic: ASTM E96, 0.3 perms or lower.
 - E. Pipe Boots: Construct pipe boots from vapor retarder material and pressure-sensitive tape per manufacturer's instructions.

2.03 SEALANTS

- A. Sealant Materials: As recommended by sealant manufacturer, appropriate to application, and compatible with adjacent materials.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and conditions are ready to accept the work of this section.

3.02 PREPARATION

- A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.

3.03 INSTALLATION

- A. Install materials in accordance with manufacturer's instructions.
- B. In exterior stud-framed walls and at roof joists/trusses, attach sheet seal to inside stud faces with mechanical fasteners after installing sealant. Lap edges 16 inches over stud/joist faces, seal laps with tape. Seams over a single stud/joist face must be sealed between sheet seal layers with approved sealant. Lap ends onto adjacent construction; seal ends with sealant.
- C. At window, door, and any other penetration or openings install vapor barrier to cover full width of faces of jambs and head. Seal between those surfaces and adjacent wall vapor barrier material and attach with tape. Seal laps with sealant. Position lap seal over firm bearing.
- D. Install Weather Resistant Membrane in lieu of Vapor Retarder behind water resistant gypsum board. (do not place continuous layer of non-breathable material behind plastic tub surround).
- E. Under concrete slab-on-grade:
 1. Install reinforced vapor retarders in accordance with manufacturer's instructions and ASTM E 1643 at concrete slabs.
 2. Install vapor retarders continuously at locations as indicated on the drawings. Ensure there are no discontinuities in vapor retarder at seams and penetrations.
 3. Install vapor retarders in largest practical widths.
 4. Ensure surface beneath vapor retarder is smooth with no sharp projections.
 5. Lap vapor barrier over footings and seal to foundation walls.
 6. Lap vapor retarder 6 (12 inches over under-slab radon vent system and gas-permeable layer) inches and seal with manufacturer's tape. Ensure vapor retarder surfaces to receive mastic tape are clean and dry.
 7. Immediately repair holes in vapor retarder with self-adhesive repair tape.
 8. Seal around pipes and other penetrations in vapor retarder with pipe boots in accordance with manufacturer's instructions. Sealant must be used - foam is not acceptable.
 9. Vapor barrier must be installed above radon vent system.
- F. All tears and punctures must be carefully patched with poly extending minimum 16" beyond tear and all edges sealed with polyethylene tape or sealant.

3.04 FIELD QUALITY CONTROL

- A. Owner Representative review and approval of vapor retarder installation is required prior to installation of interior gypsum board. Contractor is to notify Owner Representative when installation of weather resistive barrier is complete and ready for review. Schedule Owner Representative review in a timely fashion. Review shall be made of an entire completed unit.

END OF SECTION 07 2500

SECTION 07 2610
WEATHER RESISTANT MEMBRANES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Weather resistant membranes for exterior building wrap.

1.02 RELATED SECTIONS

- A. Section 06 1000 - Rough Carpentry: Wall sheathing.
- B. Section 07 4623 - Engineered Wood Siding
- C. Section 08 1713 - Integrated Metal Door Opening Assemblies.
- D. Section 08 3613 - Overhead Doors.
- E. Section 08 5313 - Vinyl Windows.

1.03 SUBMITTALS

- A. See Section 01 01 3000 - Administrative Requirements for submittal procedures.
- B. Test Results: Submit copies of test results showing performance characteristics equaling or exceeding those specified.
- C. Submit manufacturer's installation instructions.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements - Weather Resistant Barrier products that comply with:
 - 1. Minnesota Lath and Plaster Bureau, "Stucco in Residential Construction;" 2000.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturer: DuPont Company; Wilmington, DE; ASD.
 - 1. Tyvek; Product: Drainwrap: www.tyvek.com.
- B. Substitutions: Not permitted.

2.02 MATERIALS

- A. Weather Resistant Barrier.
 - 1. Provide Tyvek Drainwrap behind siding.
- B. Sealing and Flashing Tape:
 - 1. For Tyvek Drainwrap: Tyvek tape
- C. Sealant: Sealant as recommended by manufacturer.
- D. Fasteners: Tyvek wrap caps or approved fasteners.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Prior to installation, verify that walls are constructed, roof sheathing is installed, step and kick-out flashings are installed.
- B. Unwrap roll at corner, leaving 6 inches to 12 inches vertical overlap. Roll should be plumb. Bottom roll edge should extend over sill plate interface at least 2 inches. Seal wrap at bottom of the wall with caulk, Tyvek Tape, or StraightFlash. Extend to 3/4" below bottom of sill plate for slab on grade foundations. Note: Install with drainage grooves vertical.
- C. Secure barrier to the stud. Fasteners should be spaced no closer than 6 inches and no further than 18 inches on vertical and horizontal stud lines. Use washer head fasteners such as Tyvek Wrap Caps (nails, screws, staples). Wide staples with a 1 inch minimum crown can also be used except when installing Dupont Tyvek over foam sheathing. Note: Do not fasten within 9 inches of rough opening head.

- D. Unroll directly over windows and doors. Upper layer of water-resistive barrier should overlap bottom layer of WRB by a minimum of 6 inches. Coordinate installation with wall, door, window and masonry flashings.
- E. All seams shall be taped with DuPont Tyvek Tape in accordance with manufacturer's instructions.

3.02 INSTALLATION

- A. Install weather resistant membranes in accordance with manufacturer's instructions over exterior sheathing and before windows and doors are set.
 - 1. Install weather resistive barrier at all wall surfaces lapping edges 2 inches and ends 6 inches. Attach with fasteners at 3 feet o.c. maximum. Extend barrier full height from 3/4" below sill plate up through soffit space to bottom of air vent below roof sheathing. Barrier should lap over nailing fins and abut window and door jambs. Each course and layer of weather resistive barrier is to be one continuous piece (corner to corner) on each exterior wall of building. Piercing of weather resistive barrier will not be allowed unless flashing is installed or penetration is repaired.
- B. At windows and doors, full jamb and pan-flashing will be installed, see Section 08 5313 - Vinyl Windows. Coordinate weather barrier installation with this work. Do not cut weather barrier or install flashing before on-site window pre-installation meeting is held and installers are aware of required window flashing methods.
- C. Ensure that weather resistant membranes are air tight, free from holes, tears, and punctures.
- D. Coordinate installation of weather resistant membrane with wall, door, window, and masonry flashings.
- E. Seal all minor cuts, tears, or overcuts with two pieces of tape. Bottom tape shall lap shingle-style under top part of weather barrier.
- F. Limit exposure of weather resistive membranes and window flashing components to the elements prior to installing siding to a maximum of 30 days.
- G. All Drainwrap must be installed with corrugation lines running vertically. All horizontal joints and patches must be shingle-lapped.

3.03 FIELD QUALITY CONTROL

- A. Owner Representative review and approval of weather resistive barrier installation is required prior to installation of exterior siding and trim. Contractor is to notify Owner Representative when installation of weather resistive barrier is complete and ready for review. Schedule Owner representative review in a timely fashion to allow exterior siding and trim to be installed within 30 days of installation of weather resistive barrier. Review shall be made of an entire completed building elevation.
- B. Owner Representative may reject work or require additional work as needed to ensure that the installed weather barrier forms a complete, fully and properly lapped water-shedding barrier over the entire wall before siding is installed.

END OF SECTION 07 2610

SECTION 07 3113 ASPHALT SHINGLES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Granule surfaced asphalt fiberglass shingle roofing.
- B. Moisture shedding self-sealing underlayment, eave and valley protection.
- C. Associated metal flashing.

1.02 RELATED SECTIONS

- A. Section 06 1000 - Rough Carpentry: Plywood Roof Sheathing.
- B. Section 07 2500 - Vapor Retarders and Air Barrier.
- C. Section 07 6200 - Sheet Metal Flashing and Trim.
- D. Section 07 7100 - Roof Specialties: Ridge vent and roof vents.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide manufacturer's printed product information indicating material characteristics, performance criteria, and product limitations.
- C. Certificate of Compliance: Provide Certificate of Compliance from an independent laboratory indicating that the asphalt fiber glass shingles made in normal production meet or exceed the requirements of the following:
 - 1. ASTM E 108/UL 790 Class A Fire Resistance.
 - 2. ASTM D 3161/UL 997 Type I Wind Resistance.
- D. Samples: Submit two samples, 6 x 6 inches in size of actual shingle colors for selection.

1.04 ENVIRONMENTAL REQUIREMENTS

- A. Take special care when applying WinterGuard Shingle Underlayment and shingles when ambient or wind chill temperature is below 45 degrees F. Tack WinterGuard in place if it does not adhere immediately to the deck.

1.05 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer's Warranty: Furnish shingle manufacturer's warranty as specified under product description and as follows:
 - 1. Basic Warranty: Repair or replace shingles found to be defective during the warranty period.
 - 2. SureStart Warranty: Also cover labor and materials in the event of a material defect for the period indicated after completion of application of shingles.
- C. Contractor shall guarantee the roof assembly to be weather tight for 2 years after acceptance of the Work by the Owner.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Manufacturer: CertainTeed Corporation; Product "Landmark": www.certainteed.com.
- B. Other Acceptable Manufacturers:
 - 1. GAF; "Timberline HD" shingles, "Weather Watch" underlayment, and "Shingle Mate".
- C. Substitutions: See Section 01 6000 - Product Requirements.

2.02 ASPHALT FIBERGLASS SHINGLES

- A. CertainTeed "Landmark": Conforming to ASTM D 3018 Type I - Self-Sealing; UL Certification of ASTM D 3462, UL 997 80-mph Wind Resistance, and UL Class A Fire Resistance; glass fiber mat base, ceramically colored/UV resistant mineral surface granules across entire face of

shingle.

1. Type: Two-piece laminated shingle.
2. Warranty: Lifetime, limited transferable warranty plus 10-year SureStart warranty, 10-year StreakFighter warranty, 15-year 100 mph wind-resistance warranty.
3. Weight: 240 pounds per square.
4. Color: As selected from manufacturer's standards.

2.03 SHEET MATERIALS

- A. Mineral Surfaced Roll Roofing: 90 pounds mineral surfaced roll roofing complying with ASTM D249. Provide roll roofing to match shingles for use as starter course.
- B. Eaves and Valley self-sealing protective underlayment: Shall be manufactured by the same manufacturer as the shingles; ASTM D 1970 sheet barrier of self-adhering rubberized asphalt membrane shingle underlayment having internal reinforcement, and split back plastic release film; provide material with warranty equal in duration to that of shingles being applied.
 1. CertainTeed "WinterGuard".
- C. Underlayment: ASTM D 226, asphalt saturated felt (non-perforated).

2.04 FLASHING MATERIALS

- A. Flashing at intersection of sidewall and top edge of shed roof: ASTM A 361/A 361M; 24 gage steel with minimum G115/Z350 galvanized coating.
- B. Kick-out flashing at locations where fascia abuts sidewall: preformed (solder or welded) 24 gage galvanized steel
- C. Roof Edge Sheet Flashing: Alcoa F9S1; 0.024 inch thick aluminum, prefinished, color as selected by Owner.
- D. Bituminous Paint: Acid and alkali resistant type; black in color.
- E. Tinner's Paint: Color as selected by Owner to coordinate with shingle color.

2.05 ACCESSORIES

- A. Nails: Standard round wire type roofing nails, corrosion resistant; hot dipped zinc coated steel, aluminum, or chromated steel; minimum 3/8 inch head diameter; minimum 11 or 12 gage shank diameter; shank to be of sufficient length to penetrate through roof sheathing or 3/4 inch into solid wood, plywood, or non-veneer wood decking.
- B. Asphalt Roofing Cement: ASTM D 4586, Type I or II.

2.06 FLASHING FABRICATION

- A. Form flashing to profiles indicated on drawings and to protect roofing materials from physical damage and shed water.
- B. Form sections square and accurate to profile, in maximum possible lengths, free from distortion or defects detrimental to appearance or performance.
- C. Roof edge flashing is to be equal to Alcoa traditional F9S1, 1 inch high by 2-7/8 inches deep.
- D. Provide stepped flashing at wall and roof junctions of galvanized steel. Where fascia abuts sidewall, install preformed kick-out interleaved with step flashing.
- E. Provide prefinished aluminum rain diverters where indicated on drawings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that roof penetrations and plumbing stacks are in place and flashed to deck surface.
- B. Verify roof openings are correctly framed prior to installing work of this section.
- C. Verify deck surfaces are dry and free of ridges, warps, or voids.
- D. Proceed with shingle work only after completion of construction of roof deck application of underlayment and installation of all items penetrating the roof. Roofing work shall be done only when weather conditions permit. Roof deck shall be dry.

3.02 ROOF DECK PREPARATION

- A. Follow shingle manufacturer's recommendations for acceptable roof deck materials.
- B. Broom clean deck surfaces under eave protection and underlayment prior to their application.

3.03 INSTALLATION - EAVE ICE DAM PROTECTION

- A. Place eave edge and gable edge metal flashing tight with fascia boards, see Section 07 2500 - Vapor Retarders for edging at fascia to receive gutters. Weather-lap joints 2 inches. Secure flange with nails spaced 8 inches on center.
- B. Apply CertainTeed WinterGuard Waterproofing Shingle Underlayment as eave protection in accordance with manufacturer's instructions.
- C. Extend a minimum of 2 rolls width of eave protection membrane minimum 48 inches (measured horizontally) up slope beyond interior face of exterior wall.

3.04 INSTALLATION - PROTECTIVE UNDERLAYMENT

- A. Roof Slope Between 2:12 and 4:12: Apply 1 layer of WinterGuard over all areas not protected by eave ice dam protection, with ends and edges weather-lapped in accordance with manufacturer's instructions. Stagger end-laps each consecutive layer. Nail in place.
- B. Roof Slope 4:12 or Greater: Install one layer asphalt felt shingle underlayment perpendicular to slope of roof and lap minimum 4 inches over eave protection.
- C. Weather-lap and seal watertight with asphalt roofing cement items projecting through or mounted on roof. Avoid contact of solvent-based cements with WinterGuard.
- D. Where roofs abutt walls, provide WinterGuard a minimum 8 inches beyond fascia on wall.

3.05 INSTALLATION - VALLEY PROTECTION

- A. At valleys, first place one ply of WinterGuard, minimum 72 inches wide, centered over valleys. Lap joints minimum 6 inches. Follow instructions of shingle and waterproofing membrane manufacturer.
- B. Shingles at valley shall be installed to form a metal valley joint complying with manufacturer's printed instructions. Lap sections of valley flashing 8 inches minimum in direction of flow. Valley flashing shall have 5 inches minimum exposure and shingles shall lap flashing at least 8 inches on each side. Install cleats at 18 inches minimum each side. Conceal all fasteners.
- C. Contractor may, with prior approval of Owner, provide woven valley flashing instead of metal valleys. Provide drawings and specifications of valley flashing for prior approval.
- D. Provide galvanized flashing extending vertically 8 inches (minimum) where roofing meets vertical elements. Provide flashing in reglet where roofing meets a masonry wall.

3.06 INSTALLATION - METAL FLASHING

- A. Weather-lap joints minimum 2 inches.
- B. Seal work projecting through or mounted on roofing with asphalt roofing cement and make weather-tight.

3.07 INSTALLATION - ASPHALT SHINGLES

- A. Install shingles in accordance with manufacturer's instructions for product type and application specified.
- B. Install starter strip according to manufacturer's specifications. The starter strip shall be 9 inches wide, roll roofing or trimmed shingles and shall overhang drip edge by amount recommended by manufacturer. Nail starter strip 6 inches on center at a line 3 inches from the edge of the roof. Stagger shingles from one course to the next course.
- C. Use 4 nails for 36 inches long shingles. No staples allowed. Place nails 1 inch from the ends and above the tab cuts. Do not nail in the sealer strip or at exposed areas of the shingle. Form ridges with cut shingles maintaining a 5 inches weather exposure. Install shingles on 'shingle vent'. Trim shingles neatly at rake edge.

- D. Install valley shingles to provide woven valley. (If metal valley is used, cement shingles to the flashing at roof valleys). Cement flashing to the flashing at roof penetrations. Provide metal flashing where roofs intersect walls. Flashing shall extend a minimum of 8 inches up the wall under the siding.
- E. Install shingles on shingle ridge vent.

END OF SECTION 07 3113

**SECTION 07 4623
ENGINEERED WOOD SIDING**

ENGINEERED WOOD SIDING

1.01 SECTION INCLUDES

- A. Engineered Wood Siding/Cladding.
 - 1. Lap Siding
 - 2. Panel Siding (board and batten application and porch soffit)
 - 3. Trim (used as trim and battens)
 - 4. One piece outside corner trim
- B. PVC Trim.
- C. Accessories:
 - 1. Fasteners.
 - 2. Sealant.
 - 3. Water-resistive barrier.
 - 4. Flashing.

1.02 RELATED SECTIONS

- A. Section 01 2300 - Alternates
- B. Section 06 10 00 - Rough Carpentry.
- C. Section 07 62 00 - Sheet Metal Flashing and Trim.

1.03 REFERENCES

- A. ASTM A 153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- B. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants.
- C. ANSI A135.6 - Engineered Wood Siding.
- D. APA: PS 2-10 - Performance Standard for Wood-Based Structural-Use Panels.
- E. APA: PRP 108 - Performance Standards and Qualification Policy for Structural-Use Panels.
- F. APA: PR-N124 - APA Product Report, LP SmartSide Strand Substrate Lap and Panel Siding.
- G. APA: PR-N117 - APA Product Report, LP SmartSide Strand Substrate Soffit.
- H. Department of Housing and Urban Development (HUD):
- I. HUD-UM-40 - HUD Building Product Standards and Certification Program Plywood and Other Performance Rated Wood-Based Structural-Use Panels.
- J. Florida Product Approval: FL# 9190 - LP SmartSide Strand & Fiber Substrate Lap and Panel Siding.
- K. Florida Product Approval: FL# 9103 - LP SmartSide Strand & Fiber Substrate Lap and Panel Siding.
- L. ICC Evaluation Service (ICC-ES):: ESR-1301 - LP SmartSide Strand Substrate Lap and Panel Siding.
- M. Texas Department of Insurance (TDI):
 - 1. EC-22 - LP SmartSide Strand Substrate Lap and Panel Siding.
 - 2. EC-35 - LP SmartSide Fiber Substrate Lap and Panel Siding.
- N. California Department of Forestry & Fire Protection - Office of State Fire Marshal - Fire Engineering - Building Materials Listing Program (BML):
 - 1. BML No. 8140-2027:0001 - LP SmartSide Strand Substrate Lap Siding.
 - 2. BML No. 8140-2027:0002 - LP SmartSide Strand Substrate Panel Siding.
 - 3. BML No. 8140-2027:0003 - LP SmartSide Fiber Substrate Lap Siding.
 - 4. BML No. 8140-2027:0004 - LP SmartSide Fiber Substrate Panel Siding.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data:
 - 1. Application Instructions.
 - 2. Maintenance and Care Instructions.
- C. Verification Samples: For each exposed product and texture specified, two samples, minimum size 6 inches (152 mm) long representing actual product, color, texture, and patterns.
- D. Shop Drawings: Include details of materials, construction and finish. Include relationship with adjacent construction.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum five years documented experience.
- B. Installer Qualifications: Company specializing in performing Work of this section with minimum two years documented experience with projects of similar scope and complexity.
- C. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.
- D. Mock-Up: Construct a mock-up with actual materials in sufficient time for Owner's review and to not delay construction progress. Locate mock-up as acceptable to Owner and provide temporary foundations and support.
 - 1. Intent of mock-up is to demonstrate quality of workmanship and visual appearance.
 - 2. If mock-up is not acceptable, rebuild mock-up until satisfactory results are achieved.
 - 3. Retain mock-up during construction as a standard for comparison with completed work.
 - 4. Do not alter or remove mock-up until work is completed or removal is authorized.

1.06 PRE-INSTALLATION CONFERENCE

- A. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Owner, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Store and handle in strict compliance with manufacturer's written application instructions and recommendations.
- B. Protect from damage due to weather, excessive temperature, and construction operations.

1.08 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.09 SEQUENCING

- A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
 - 1. WARRANTY
- B. Manufacturer's Warranty: Provide manufacturer's Limited Warranty.
 - 1. Limited Warranty Period: Fifty years, first 5 years equal to the cost of repairing or replacing, then prorated from the 6th year through the 49th year from the date of installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Engineered Wood Siding Panels and Trim Boards
 - 1. LP Building Products: www.lpcorp.com.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.

- B. Solid Plastic Trim Boards:
 1. VERSATEX Building Products, LLC; www.versatex.com.
 2. AZEK Exteriors; www.azekexteriors.com.
 3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 ENGINEERED WOOD SIDING/CLADDING

- A. Basis of Design - LAP SIDING: SmartSide ExpertFinish Strand Lap Siding; as manufactured by LP Building Products.
 1. Description: Exterior-grade, phenolic resin-saturated, paper overlay laminated to
 - a. EPA-registered zinc-borate preservative-treated engineered wood siding. Edges beveled and sealed for moisture resistance.
 - 1) Stepped butt joint plank ends.
 2. Finish: Factory finished.
 - a. Color to be selected by Owner from manufacturer's full range of standard colors.
 3. Thickness, 76 Series: 0.375 inch (10 mm) minimum.
 4. Style : Smooth Texture.
 5. Exposure: 5 inches (127 mm), nominal.
 6. Length: 16 feet (4877 mm).
- B. Basis of Design - PANEL AT BOARD AND BATTEN AND PORCH CEILING: Fiber Panel Siding, 76 Series; as manufactured by LP Building Products.
 1. Type: Engineered wood siding with resin and linseed oil impregnated surface, treated with EPA-registered zinc-borate preservative.
 2. Standards Compliance: ANSI A135.6 compliant.
 3. Finish: Factory finished.
 - a. Color to be selected by Owner from manufacturer's full range of standard colors.
 4. Thickness: 0.375 inch (10 mm), minimum.
 5. Style: Smooth Finish.
 6. Width: 48.56 inches (1233 mm), actual width.
 7. Length: 8 feet (2438 mm).
 8. Length: 9 feet (2743 mm).
 9. Edges: Square Edge.

2.03 TRIM BOARDS

- A. Engineered Wood Siding:
 1. Basis of Design: SmartSide ExpertFinish strand trim and fascia; as manufactured by LP Building Products.
 - 1) Single-piece outside corner posts.
 - 2) Finish: Factory finished.
 - (a) Color to be selected by Architect from manufacturer's full range of standard colors.
 - 3) Thickness, 540 Series: 0.910 inch (23 mm).
 - 4) Style : Smooth Texture.
 - 5) Width: 3.50 inches (89 mm), actual.
 - 6) Length: 16 feet (4877 mm).
- B. Basis of Design: Fiber Trim and Fascia; as manufactured by LP Building Products.
 1. Thickness, 440 Series: 0.625 inch (16 mm) minimum. (ONLY AT BATTENS FOR PANEL AT GABLES AND PORCH CEILING)
 2. Thickness, 540 Series: 0.910 inch (23 mm) minimum. (ALL TRIM TYPICAL)
 3. Style : Smooth Finish
 4. Widths: As indicated on Architectural drawings.
 5. Width: 2.70 inches (69 mm), actual. (BATTENS)
 6. Width: 3.50 inches (89 mm), actual.
 7. Width: 5.50 inches (140 mm), actual.
 8. Width: 7.21 inches (183mm), actual.

9. Width: 9.21 inches (234 mm), actual.
10. Length: 16 feet (4877 mm).
- C. Solid Plastic Trim Boards
 1. Style : Smooth Texture.
 2. Widths: As indicated on Architectural drawings.
 3. Finish: Field finish.

2.04 ACCESSORIES

- A. Fasteners: ASTM A 153:
 1. Hot-dip galvanized or stainless steel nails with 0.113 inch (2.9 mm) diameter shank.
 2. Penetrate structural framing or wood structural panels and structural framing a minimum of 1-1/2 inches (38 mm).
- B. Sealant: ASTM C 920, minimum Class 25 sealant.
- C. See Section 07 2500 for weather barrier.
- D. See Section 07 6200 for metal flashing.
- E. Soffit Vents:
 1. Continuous prefinished metal linear soffit vents: Air Vent Inc.; SV 202: www.airvent.com.
 2. Substitutions: See Section 01 6000 - Product Requirements.
- F. Touch-up paint.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly constructed and prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.
- C. Verify location of concealed framing support and anchorage.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's application instructions approved submittals and in proper relationship with adjacent construction.
 1. Install in accordance with conditions stated in ICC-ES ESR-1301 for strand substrate products and ICC-ES ESR-3090 for fiber substrate products.
 2. Properly space joints to allow for equilibration.
- B. Do not install over damaged or crooked materials.
- C. Do not cut siding/cladding to fabricate trim; use trim components.
- D. After installation, seal and flash joints, except the overlapping horizontal lap joints.
- E. Seal around penetrations.
- F. All wood substrate that is exposed to the weather must be sealed in a manner that prevents moisture intrusion and water build up.
 1. Seal ALL exposed cuts of siding and trim. Field spray applied coatings on cuts are not recommended.
 2. Sealing can be accomplished by applying a coating or sealant according to the manufacturer's requirements.
 3. Butt joints that are covered with joint moldings, sealant, or factory prefinished ends are considered sealed from the weather.

3.04 CLEANING AND PROTECTION

- A. Clean products in accordance with the manufacturers Care and Maintenance Instructions.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 07 4623

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SECTION 07 6200
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fabricated sheet metal items, including flashings, counterflashings, gutters, downspouts, sheet metal roofing, and other items indicated in Schedule.
 - 1. Flashings fabricated sheet metal items .
 - 2. Gutters.
 - 3. Downspouts.
 - 4. Fascia.
 - 5. Vented Soffits.
 - 6. Flue Caps.
 - 7. Window/Door/Louver head flashing.
 - 8. Sill Flashing (above masonry/stone).
 - 9. Flashing in siding at mounting blocks, at bottom and intermediate trim boards at changes of materials and any other locations indicated on Drawings.
- B. Sealants for joints within sheet metal fabrications.

1.02 RELATED SECTIONS

- A. Section 06 1000 - Rough Carpentry: Wood nailers for sheet metal work.
- B. Section 07 3113 - Asphalt Shingles: Flashings associated with shingle roofing.
- C. Section 07 4623 - Engineered Wood Siding
- D. Section 08 1713 - Integrated Metal Door Opening Assemblies.
- E. Section 08 3613 - Overhead Doors.
- F. Section 08 5313 - Vinyl Windows.
- G. Section 07 6200 - Engineered Wood Siding
- H. Section 07 9005 - Joint Sealers.
- I. Section 09 9000 - Painting and Coating: Field painting.

1.03 REFERENCE STANDARDS

- A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels; 2013.
- B. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- C. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2014.
- D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.
- E. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2012).
- F. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Samples: Submit two samples 6 x 6 inch in size illustrating metal finish color.
- C. Colors to be selected by Owner from manufacturer's standard range.

1.05 PERFORMANCE REQUIREMENTS

- A. Installation of flashing and sheet metal work is to be water-tight/weatherproof.

1.06 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA Architectural Sheet Metal Manual requirements and standard details, except as otherwise indicated.
- B. Fabricator and Installer Qualifications: Company specializing in sheet metal work with 3 years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- B. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.01 SHEET MATERIALS

- A. Aluminum: ASTM B209 (ASTM B209M); 20 gage, (0.032 inch) thick; mill finish.
- B. Pre-Finished Aluminum: ASTM B209 (ASTM B209M); 20 gage, (0.032 inch) thick; plain finish shop pre-coated with modified silicone coating.
 - 1. Fluoropolymer Coating: High Performance Organic Finish, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system.
 - 2. Color: As selected by Architect from manufacturer's standard colors.
- C. Fascia, Coping, and Roof Flashing with exposed vertical face as follows:
 - 1. 8 inches or less: 24 gauge.
 - 2. 8-10": 22 gauge.
 - 3. 10-15": 20 gauge.

2.02 ACCESSORIES

- A. Fasteners: Same material and finish as flashing metal .
- B. Primer: Zinc chromate type.
- C. Protective Backing Paint: Zinc molybdate alkyd.
- D. Sealant: Type; one-part urethane specified in Section 07 9005 - Joint Sealers.

2.03 FABRICATION

- A. General: Shop fabricate work to greatest extent possible, comply with details shown and with applicable requirements of S.M.A.C.N.A. "Architectural Sheet Metal Manual", the "Roofing and Waterproofing Manual" by NRCA, and other recognized industry practices. Fabricate for waterproof and weather resistant performance; with expansion provisions for running work, sufficient to permanently prevent leakage, damage or deterioration of the work. For work to fit substrates. comply with material manufacturers instructions and recommendations. Form exposed sheet metal work without excessive oil-canning effect, buckling and tool marks, true to line and levels as indicated, with exposed edges folded back to form hems. Secure flashings in place using concealed fasteners.
- B. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- C. Form pieces in longest possible lengths.
- D. Hem exposed edges on underside 1/2 inch; miter and seam corners.
- E. Form material with flat lock seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
- F. Fabricate corners from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.
- G. Fabricate vertical faces with bottom edge formed outward 1/4 inch (6 mm) and hemmed to form drip.

2.04 FASCIA AND SOFFITS

- A. Fascia:

1. Basis of Design: Mastic/Plygem: "Performance Metals Envoy Fascia".
 2. Color to be selected by Owner from manufacturer's standard range of colors.
- B. Vented Soffits:
1. Basis of Design: Mastic/Plygem "Endurance Perforated".
 2. Net free vent area per lineal foot: 15 square inches.
 3. Color to be selected by Owner from manufacturer's standard range of colors.
 4. Proposed product substitutions shall meet or exceed net free vent area.

2.05 GUTTER AND DOWNSPOUT FABRICATION

- A. Gutters and Downspouts: Provide "Performance Metals 6" gutters (.032 nominal thickness) and 3" x 4" downspouts (.024 nominal thickness) with prefinished aluminum by Mastic Home Exteriors (Alcoa) or equal by Rollex.
- B. Accessories: Profiled to suit gutters and downspouts.
1. Anchorage Devices: In accordance with SMACNA requirements.
 2. Gutter and Downspout Supports: Provide supports, anchorage devices (strap hanger OG11 at gutter with roof apron RTSW), for installation as recommended by the manufacturer.
 3. P-T3W roof edge.
- C. Downspout Boots: Aluminum.
- D. Caps, outlets, headers, fasteners and sealant for installation as recommended by the manufacturer.
- E. Miscellaneous: Provide flashing at miscellaneous locations as detailed or as necessary to provide a water and weather tight installation. Provide prefinished aluminum drip cap at window heads, door heads, exterior wall horizontal and base trim, mounting blocks, and other exposed locations as necessary.

2.06 ACCESSORIES

- A. Fasteners: Galvanized steel, with soft neoprene washers.
- B. Primer: Zinc chromate type.
- C. Concealed Sealants: Non-curing butyl sealant.
- D. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.
- E. Plastic Cement: ASTM D4586/D4586M, Type I.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
- B. Before starting work, verify dimensions. Examine adjoining work. Check for bowed surfaces, and similar conditions which may be possible moisture problems or result in an uneven surface for siding or trim.

3.02 PREPARATION

- A. Install starter and edge strips, and cleats before starting installation.
- B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

3.03 INSTALLATION

- A. Secure flashings in place using concealed fasteners. Use exposed fasteners only where permitted.
- B. Apply plastic cement compound between metal flashings and felt flashings.

- C. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- D. Seal metal joints watertight.
- E. Provide for separation of dissimilar metals or corrosive substrates by coating concealed surfaces with bituminous coating or other permanent separation as recommended by manufacturer/fabricator. Provide sawcut reglets as necessary for complete installation.
- F. Provide for thermal expansion of running sheet metal work, by overlaps or expansion joints in fabricated work. Seal moving joints in metal work with elastomeric sealants, complying with FS SS-T-00227, -00230, or -001543. Space joints at intervals of not more than 50 feet.

3.04 GUTTER AND DOWNSPOUT INSTALLATION

- A. Provide gutters and downspouts at locations indicated, provide complete counterflashing for scuppers. Provide complete attachment accessories and fasteners for downspouts. Fabricate from prefinished sheet metal. Coordinate installation of hangers with roofer.
- B. Secure roof edge, gutters, and downspouts in place using concealed fasteners.
- C. Install gutters, downspouts, and accessories in accordance with manufacturer's instructions. Join lengths with seams sealed watertight. Flash and seal gutters to downspouts and accessories.
- D. Slope gutters in accordance with manufacturer's instructions. Slope gutters 1/8 inch per foot minimum.

3.05 CLEANING

- A. Upon completion, all work shall be cleaned.

END OF SECTION 07 6200

SECTION 07 7100
ROOF SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Manufactured roof specialties, including copings, fascias, gravel stops, and vents.

1.02 RELATED SECTIONS

- A. Section 07 3113 - Asphalt Shingles.
- B. Section 07 9005 - Joint Sealers.

1.03 REFERENCE STANDARDS

- A. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2012).

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Samples: Submit two appropriately sized samples of roof vent.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Ridge Vent:
 - 1. Air Vent; Product ShingleVent II: www.airvent.com.
 - 2. Master Flow; Product "AR10 Ridge Vent": www.gaf.com.
 - 3. Color: to match shingles.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Roof Vent:
 - 1. Air Vent; Product Square Metal Roof Vent.
 - 2. Color: As selected from manufacturer's full standard range of colors to best match shingles.
 - 3. Provide 50 square inches of net free area per piece.

2.02 ACCESSORIES

- A. Roof Cement: ASTM D4586, Type I.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that deck, curbs, roof membrane, base flashing, and other items affecting work of this Section are in place and positioned correctly.

3.02 INSTALLATION

- A. Install components in accordance with manufacturer's instructions.
- B. Vents: Install quantity of vent units to provide a minimum of 1/300 of area in each draft-stopped space.

END OF SECTION 07 7100

SECTION 07 9005

JOINT SEALERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Sealants and joint backing, including, but not limited to:
 - 1. Interior and exterior joints at all windows, door frames, louvers, lintels, and grilles.
 - 2. Joints at lavatories, toilets, sinks, and showers.
 - 3. Masonry expansion and control joints.
 - 4. Joints at wood trim at exterior.
 - 5. Joints at counter tops.
 - 6. Under exterior door thresholds.
 - 7. Interior window frames where gypsum board returns to window.
 - 8. Joints at plumbing and electrical penetrations in exterior and party walls.
 - 9. Joints between door frames, side lites, louvers, grilles, and other frames in interior walls and surrounding construction.
 - 10. Joints of dissimilar materials on exterior walls.

1.02 RELATED SECTIONS

- A. Section 01 9100 - Green Building Requirements - Blower door test
- B. Section 03 3000 - Cast-in-Place Concrete: Sealant for joints in concrete.
- C. Section 04 2731 - Reinforced Unit Masonry.
- D. Section 06 1000 - Rough Carpentry: Acoustical sealant at framing.
- E. Section 07 2500 - Vapor Retarders: Sealants required in conjunction with air barriers and vapor retarders.
- F. Section 07 6200 - Sheet Metal Flashing and Trim: Sealant in conjunction with joints between flashing and surrounding construction.
- G. Section 07 8400 - Firestopping: Firestopping sealants.
- H. Section 09 2116 - Gypsum Board Assemblies: Acoustic sealant at partitions.

1.03 REFERENCE STANDARDS

- A. ASTM C834 - Standard Specification for Latex Sealants; 2014.
- B. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2012.
- C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.
- D. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2013.
- E. BAAQMD 8-51 - Bay Area Air Quality Management District Regulation 8, Rule 51, Adhesive and Sealant Products; www.baaqmd.gov; current edition.
- F. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition.

1.04 PERFORMANCE REQUIREMENTS

- A. Provide joint sealers, joint fillers and other related materials that are compatible with one another and with joint substrates under service and application conditions, as demonstrated by testing and field experience.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data indicating sealant chemical characteristics.
- C. Samples: Submit two samples, 1/4 x 2 inch in size illustrating sealant colors for selection.
- D. All products are to be low-VOC emitting products and must comply with Regulation 8, Rule 51 of the Bay Area Air Quality Management District.

1.06 FIELD CONDITIONS

- A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.07 COORDINATION

- A. Coordinate the work with all sections referencing this section.

1.08 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Correct defective work within a one year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, exhibit loss of adhesion or cohesion, or do not cure.
 - 1. Provide one year manufacturer's written warranty (materials).
 - 2. Provide one year installer's warranty (installation).

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Sanitary Silicone Sealants:
 - 1. Pecora Corporation; Product "898": www.pecora.com. VOC Content: 40 g/L.
 - 2. BASF Construction Chemicals, Inc; Product "Omniplus": www.chemrex.com. VOC Content: 0 g/L.
 - 3. Tremco, Inc; Product "Tremsil 200": www.tremcosealants.com. VOC Content: 3 g/L.
 - 4. Substitutions: See Section 01600 - Product Requirements.
- B. Weatherproofing Silicone Sealants:
 - 1. Pecora Corporation; Product "895 NST": www.pecora.com. VOC Content: <100 g/L.
 - 2. Tremco, Inc; Product "Tremsil 600": www.tremcosealants.com. VOC Content: 8 g/L.
 - 3. Substitutions: See Section 01600 - Product Requirements.
- C. One Part - Polyurethane Sealants:
 - 1. Pecora Corporation; Product "Dynatrol I-XL": www.pecora.com. VOC Content: <100 g/L.
 - 2. BASF Construction Chemicals, Inc; Product "NP1": www.chemrex.com. VOC Content: 43 g/L.
 - 3. Tremco, Inc; Product "Dymonic FC": www.tremcosealants.com. VOC Content: 105 g/L.
 - 4. Substitutions: See Section 01600 - Product Requirements.
- D. Two Part - Polyurethane Sealants:
 - 1. Pecora Corporation; Product "Dynatrol II": www.pecora.com. VOC Content: <25 g/L.
 - 2. BASF Construction Chemicals, Inc; Product "NP2": www.chemrex.com. VOC Content: 53-80 g/L.
 - 3. Tremco, Inc; Product "Dymeric 240 FC": www.tremcosealants.com. VOC Content: 35 g/L.
 - 4. Substitutions: See Section 01600 - Product Requirements.
- E. Butyl Sealants:
 - 1. Pecora Corporation; Product "BC-158": www.pecora.com. VOC Content: <250 g/L.
 - 2. Tremco, Inc; Product "Butyl Sealant": www.tremcosealants.com. VOC Content (when not used in cartridges): 226 g/L.
 - 3. BASF Construction Chemicals, Inc.; Product "Sonolac": www.chemrex.com. VOC Content: 41 g/L.
 - 4. Substitutions: See Section 01600 - Product Requirements.
- F. Acrylic Emulsion Latex Sealants:
 - 1. Pecora Corporation; Product "AC-20": www.pecora.com. VOC Content: 31 g/L.
 - 2. Tremco, Inc; Product "Tremflex 834": www.tremcosealants.com. VOC Content: 11 g/L.
 - 3. Substitutions: See Section 01600 - Product Requirements.

2.02 SEALANTS

- A. Weatherproofing - General Purpose Exterior Sealant: Weatherproofing Silicone; ASTM C 920, Grade NS, Class 25, Uses M, G, and A; single component.
 - 1. Applications use for:
 - a. Interior joints at penetrations in vapor barrier.
 - b. Seal openings of electrical boxes in exterior walls.
- B. Acrylic Emulsion Latex: ASTM C834, single component, non-staining, non-bleeding, non-sagging.
 - 1. Color: Standard colors matching finished surfaces, Type OP (opaque).
 - 2. Applications use for:
 - a. Interior joints around windows, doors, and trim.
- C. Butyl Sealant: ASTM C920, Grade NS, Class 12-1/2, Uses NT, M, A, G, O; single component, solvent release, non-skinning, non-sagging.
 - 1. Color: Standard colors matching finished surfaces.
 - 2. Applications use for:
 - a. Beneath thresholds and sill plates.
- D. One Part - Nonsag Polyurethane Sealant: ASTM C 920, Grade NS, Class 25, Uses T, I, M, A, G, O; single component, chemical curing, non-staining, non bleeding, non-sagging type.
 - 1. Color: Standard colors matching finished surfaces.
 - 2. Applications use for:
 - a. Joints in horizontal surfaces of concrete and between concrete, metal, or masonry.
- E. Two Part - Nonsag Polyurethane Sealant: ASTM C 920, Grade NS, Class 25, Uses NT, I, M, A, G, O; multi component, chemical curing, non-staining, non bleeding, capable of continuous water immersion, non-sagging type.
 - 1. Color: Standard colors matching finished surfaces.
 - 2. Application use for:
 - a. Exterior joints at walls, windows, doors, vents, flashing, etc.
 - b. Control, expansion, and soft joints in masonry.
 - c. Joints between concrete and other materials.
 - d. Joints between metal frames and other materials.
 - e. Other exterior joints for which no other sealant is indicated.
- F. Sanitary Silicone Sealant: ASTM C 920, Grade NS, Class 25, Uses NT, A, G, M, O; single component, solvent curing, non-sagging, non-staining, fungus resistant, non-bleeding.
 - 1. Color: Standard colors matching finished surfaces.
 - 2. Applications use for:
 - a. Interior joints at countertops, plumbing fixtures, ceramic tile, etc.

2.03 ACCESSORIES

- A. Acoustic Sealant: ASTM C 919; non-hardening, non-skinning, for use in conjunction with gypsum board.
 - 1. Sheetrock Brand Acoustical Sealant manufactured by USG Corporation
 - 2. Pecora BA-98 Acoustical Sealant manufactured by Pecora Corporation.
 - 3. Tremco acrylic latex caulk or Sonneborn Sonolac at exposed locations.
- B. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- C. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- D. Plastic Foam Joint-Fillers: Preformed, compressible, resilient, non-waxing, non-extruding strips of plastic foam of flexible, non-gassing, closed-cell polyethylene foam, and of size, shape and density to control sealant depth and otherwise contribute to producing optimum sealant performance. Provide type as recommended by sealant manufacturer.
- E. Joint Backing: Round foam rod compatible with sealant; ASTM D 1667, closed cell PVC; oversized 30 to 50 percent larger than joint width.

- F. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.
- B. Verify that joint backing and release tapes are compatible with sealant.

3.02 PREPARATION

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean and prime joints in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Etch concrete and masonry joint surfaces as recommended by sealant manufacturer. Roughen vitreous and glazed joint surfaces as recommended by sealant manufacturer. Prime or seal joint surface where indicated, and where recommended by sealant manufacturer. Do not allow primer/sealer to migrate onto adjoining surfaces. Mask joints as necessary to protect adjacent surfaces. Remove masking immediately after sealing joint.
- E. Protect elements surrounding the work of this section from damage or disfigurement.

3.03 INSTALLATION

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Set joint filler units at proper depth or position in joint to coordinate with other work, including installation of bond breakers, backer rods and sealant. Do not leave voids or gaps between ends of joint filler units. All caulked joints must be tape masked and tooled to be clean, smooth, even in width, and water tight.
- D. Employ only proven installation techniques, which will ensure that sealant are deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of joint bond surfaces equally on opposite sides. Except as otherwise indicated, fill sealant rabbet to a slightly concave surface, slightly below adjoining surfaces. Where horizontal joints are between a horizontal surface and vertical surface, fill joint to form a slight cove, so that joint will not trap moisture and dirt. Do not thin caulking compound. Apply in accordance with the manufacturer's recommendations.
- E. Install sealant to depths as shown or, if not shown, as recommended by sealant manufacturer but within the following general limitations, measured at center (thin) section of bead. For normal moving joints sealed with elastomeric sealants but not subject to traffic, fill joints to depth equal to 50 percent of joint width, but neither more than 1/2" deep nor less than 1/4" deep. For joints with non-elastomeric sealants and caulking compounds, fill joints to a depth in range of 75 percent to 125 percent of joint width. Joints to be tooled to slightly concave surface. Remove excess sealant material from adjacent surfaces. All adjacent painting must be completed before installing silicone caulking.
- F. Install bond breaker where joint backing is not used.
- G. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- H. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- I. Tool joints concave.

3.04 CLEANING

- A. Clean adjacent soiled surfaces.

3.05 PROTECTION

- A. Cure sealants and caulking compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal strength and surface durability. Advise Contractor of procedures required for cure and protection of joint sealers during construction period, so that they will be without deterioration or damage (other than normal wear and weathering) at time of substantial completion.

SECTION 08 1163
METAL SCREEN AND STORM DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aluminum combination storm door, self-storing.

1.02 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide door core material, face material, sizes, types, color chart, finishes, hardware, scheduled locations, and details of adjoining work.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Larson Manufacturing Company.
- B. Substitutions: See Section 01600 - Product Requirements.

2.02 SELF-STORING COMBINATION STORM AND SCREEN DOOR

- A. Larson Model 288-SS mid-view self-storing with complete hardware including self-closer. Provide spring-loaded chain shock stop.
- B. Color: White.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Hang doors, including jamb and head frames, plumb, square, level and without distortion, securely fastened to and aligned with main door. Fasten doors to allow expansion and contraction without damage to door frame, pulling out of fasteners or storm door operation. Install frame with screws providing 1" embedment into 2x framing behind brick mould.
- C. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact per ANSI/AAMA 101 "Dissimilar Materials."
- D. Ensure watertight and airtight joints between existing materials and the jamb and head frames with sealants or gaskets per manufacturer's standards. Apply sealant to comply with sealant manufacturer's recommendations, including preparation of joint faces and priming.
- E. Install hardware including latch, self-closer and spring-loaded safety chain. Adjust so door does not strike wall or other object in full-open position.
- F. Weather-stripping and/or sound insulation material shall be by Manufacturers. Install storm door after prime door is completed. Install rod stock prior to caulking where gap exceeds 1/4 inch. See Section 07 9005 - Joint Sealers.

3.02 ADJUSTING

- A. Adjust inserts, screen and hardware for smooth operation, self-closing, positive latching and continuous contact of perimeter seal with frame.

3.03 CLEANING

- A. Clean all exposed surfaces promptly after installation, exercising care to avoid damage to new and existing finishes. Remove all excess glazing and sealant compounds, dirt and other substances. Lubricate hardware and moving parts.
- B. Initiate and maintain protection and other precautions through remainder of construction period to ensure, except for normal weathering, storm door will be free of damage or deterioration upon completion of Contract.

END OF SECTION 08 1163

SECTION 08 1416
WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Flush wood doors and frames;solid core; non-rated.
- B. Prehung wood door frames.

1.02 RELATED SECTIONS

- A. Section 06 2000 - Finish Carpentry.
- B. Section 08 7100 - Door Hardware.
- C. Section 08 1713 - Integrated Metal Door Opening Assemblies.
- D. Section 09 9000 - Painting and Coating: Site finishing of doors.

1.03 REFERENCE STANDARDS

- A. ANSI A135.4 - American National Standard for Basic Hardboard; 2012.
- B. AWI/AWMAC (QSI) - Architectural Woodwork Quality Standards Illustrated; Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada; 2005, 8th Ed., Version 2.0.
- C. ICC (IBC) - International Building Code; 2012.
- D. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.
- E. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2016.
- F. UBC Std 7-2, Part II - Test Standard for Smoke- and Draft-control Assemblies; International Conference of Building Officials; 1997.
- G. UL (BMD) - Building Materials Directory; Underwriters Laboratories Inc.; current edition.
- H. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; Current Edition, Including All Revisions.
- I. WDMA I.S. 1A - Interior Architectural Wood Flush Doors; 2013.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.
- C. Specimen warranty.
- D. Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special blocking for hardware, factory machining criteria.
- E. Samples: Submit two samples of door veneer, 12 x 12 inch in size illustrating wood grain, stain color, and sheen. Jamb, casing, base, and other trim samples matching doors shall be submitted at the same time.
- F. Warranty, executed in Northwood Family Housing Limited Partnership's name.
- G. Manufacturer's warranty signed by manufacturer, Contractor and installer.
- H. Submit manufacturer certification that doors contain no added formaldehyde.

1.05 QUALITY ASSURANCE

- A. Comply with requirements of ANSI/NWMA I.S.1 Industry Standard Series for Wood Flush Doors.
- B. Interior flush doors shall be Economy Grade according to AWI "Architectural Woodwork Quality Standards", Section 01 4500 - Quality Control.
- C. Door frames are to conform to AWI 900.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Package, deliver and store doors in accordance with specified quality standard.
- B. Accept doors on site in manufacturer's packaging. Inspect for damage.
- C. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation.

1.07 PROJECT CONDITIONS

- A. Coordinate the work with door opening construction, door frame and door hardware installation.

1.08 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Interior Doors: Provide manufacturer's warranty for one year minimum.
- C. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Flush Panel Solid Core Wood Doors:
 - 1. Door surfaces: Embossed wood grain pattern masonite surface with natural look wood finish. Masonite shall have no added urea formaldehyde (NAUF).

2.02 DOORS AND PANELS

- A. Pre-Hung Swing and Frameless Closet Interior Doors:
 - 1. Provide solid core doors at all locations.
 - 2. Hardboard facing with factory opaque finish. Hardboard doors shall conform to basic hardboard product standard ANSI/AHA 135.4 and NWWDA IS 1.1 Section 3.7.3.(B).
 - 3. 1-3/8" thickness unless otherwise indicated.
- B. Solid Core Doors: Type Standard (SHC/FSHC); plies and faces as indicated above. (All doors to be solid core unless otherwise noted).

2.03 DOOR FACINGS

- A. Hardboard Facing for Opaque Finish: AHA A135.4, Class 1 - Tempered, S2S (smooth two sides) hardboard, composition face, 1/8 inch (3 mm) thick.
 - 1. Provide embossed wood grain flush panel doors with natural wood stain look. Colors to be selected from manufacturer's standard range of colors.

2.04 FRAMES AND ACCESSORIES

- A. Prehung Swinging Doors: Provide prehung door with matching wood frame complete with hinges.
 - 1. Interior Jambs, Head, and Casing: Milled solid or finger-jointed Ponderosa Pine, Idaho White Pine, Southern Pine, Douglas Fir, or equivalent WWPAA specie.
 - a. Jambs and Head: Not less than 1 1/16 inch (17 mm) thick, adjustable two-piece design with integral stop, for wall thickness indicated on drawings.
 - b. Casing: Standard profile and size selected from manufacturer's standard range.
 - 2. Hinges for Prehung Doors: as specified in Section 08 7100 - Door Hardware.
 - 3. Jambs, jamb trim, casings and base must be available in matching finish.

2.05 DOOR CONSTRUCTION

- A. Fabricate doors in accordance with AWI Quality Standards Requirements.
- B. Solid core molded construction to be particle board or MDF, pre-cut, routed or molded to fit face design. To be fully edge-blocked with solid, straight-grain wood.
- C. Door faces and cores shall contain no added urea formaldehyde.

2.06 FACTORY FITTING AND MACHINING

- A. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
 - 1. Take accurate field measurements of hardware mortises in metal frames to verify dimensions and alignment before proceeding with machining in factory.
 - 2. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.
 - 3. Doors: Fit and machine doors at factory in accordance with WDMA NWWDAL.S. 1-A.
 - 4. Provide edge clearances in accordance with AWI Quality Standards.
 - 5. Bevel lock edge of doors 1/8 inch (13 mm) for each 2 inches (50 mm) of door thickness.
- B. Bevel lock edge of doors 1/8 inch (13 mm) for each 2 inches (50 mm) of door thickness.

2.07 FACTORY FINISHING

- A. Hardboard Face Doors: Factory finish doors in accordance with manufacturer's recommendations and AWI Quality Standard, Section 01 4500 - Quality Control.
- B. Seal door top edge with color sealer to match door facing.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions and AWI P-200.
- B. Trim door height by cutting bottom edges to a maximum of 3/4 inch (19 mm).
- C. Use machine tools to cut or drill for hardware.
- D. Coordinate installation of doors with installation of frames and hardware.
- E. Doors shall be hung so they will operate freely. Jamb shall be plumb and square, maximum diagonal distortion of 1/16 inches. Allow for swelling of door during damp weather. All work shall be performed in conformance with required fire ratings and good trade practices. Damaged materials shall be removed and replaced. Install doors with adequate clearance for scheduled finish flooring. Jamb shall be shimmed and nailed minimum 3 points per side. Coordinate installation of hardware and finishing.

3.03 TOLERANCES

- A. Conform to specified quality standard for fit and clearance tolerances.
- B. Clearance on non-rated doors:
 - 1. Allow maximum of 1/8 inch at jamb and head of job site fit doors.
 - 2. Allow a maximum of 3/16 inch over threshold or saddle; verify clearance with floor coverings.
 - 3. Allow a maximum of 1/2 inch over decorative floor coverings for air passage.
- C. Conform to specified quality standard for telegraphing, warp, and squareness.

3.04 ADJUSTING

- A. Adjust doors for smooth and balanced door movement.
- B. Adjust latches, locksets, and door stops for proper operation.

END OF SECTION 08 1416

SECTION 08 1713
INTEGRATED METAL DOOR OPENING ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pre-hung Insulated metal house entrance doors and frames.
- B. Pre-hung metal garage utility doors and frames.

1.02 RELATED SECTIONS

- A. Section 08 7100 - Door Hardware: Surface-mounted hardware.
- B. Section 08 5313 - Vinyl Windows: Flashing of openings.
- C. Section 09 9000 - Painting and Coating: Field-finishing of doors and frames.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's descriptive literature demonstrating compliance with referenced standards.
- C. Shop Drawings: Indicate the following:
 - 1. Door and frame schedule; include elevations, sizes, handing.
 - 2. Locations and sizes of lites and louvers, if indicated.
 - 3. Frame sizes, profiles, and throat depths.
 - 4. Hardware preparation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Entry Door:
 - 1. Therma-Tru Doors; www.thermatru.com. "Traditions" line, design to be selected by Owner from standard line.
- B. Other Acceptable Manufacturers:
 - 1. Acorn.
 - 2. Castlegate.
 - 3. Peachtree.
 - 4. Stanley.
- C. Substitutions: See Section 01 6000 - Product Requirements.
- D. Unless otherwise specified for an individual product or material, supply all products specified in this Section from the same manufacturer.

2.02 DOORS AND FRAMES

- A. All Doors and Frames: Pre-assembled door and frame units, complying with the following:
 - 1. Physical Endurance: Standard 3 feet x 7 feet door to meet requirements of ANSI A250.4 procedure for level C doors for 250,000 cycles.
 - 2. Thermal transmittance of door without lite or louver, when tested in accordance with ASTM C 236 or C 1363 and ISDI 107: 0.25 BTU per hour per square foot per degree F, maximum.
 - 3. Sound transmission class (STC) of door without lite or louver, when tested in accordance with ISDI 103 and ASTM E 90: STC 25.
 - 4. Water penetration through door and frame assembly: No water penetration, when tested in accordance with ASTM E 331 and ISDI 104 at 25 miles per hour wind velocity.
 - a. Accessible (1/2") thresholds may waive this requirement.
 - 5. Air infiltration through door and frame assembly, when tested in accordance with ASTM E 283 and ISDI 101: 0.20 cubic feet per minute per foot of crack at 25 miles per hour wind velocity.
 - 6. Hardware preparation in accordance with DHI 115 Series.

- B. Main Entrance Doors:
 - 1. Pre-assembled and pre-hung with wood frames and hinges.
 - 2. Style: Therma-Tru Premium Steel (TS296), six-panel with 2 low-e clear glass lites (DL296).
 - 3. Style: Sixembossed, 2 lites at top.
- C. Utility Garage Doors.
 - 1. Pre-assembled and pre-hung with wood frames and spring hinges.
 - 2. 24 ga. steel (primed), insulated core, spring hinges.
 - 3. Basis of Design and style: Therma-Tru Traditions (TS210), six-panel, embossed.

2.03 DOOR COMPONENTS

- A. Doors - General Requirements:
 - 1. Thickness: 1-3/4 inches nominal.
 - 2. Face sheets: Electro-galvanized commercial steel (CS) sheet with coating conforming to ASTM A 591/A 591M, 40Z (12G) coating class; visible seams on face sheets not permitted.
 - 3. Vertical edges: Integrally formed in face sheet and continuous flush interlocking seams joining face sheets, unless otherwise indicated.
 - 4. Light openings: Formed steel edges made by stamping face sheets, not routing; finished the same as face.
 - 5. Top and bottom edges: Flush closures, integral with face sheet construction.
 - 6. Hardware reinforcement: Concealed within door construction.
 - 7. Number of hinges: 3 hinges per jamb for doors less than 7 feet tall; 4 hinges per jamb for doors 7 feet and taller.
 - 8. Reinforcement for surface hardware: Minimum 16 gage.
 - 9. Sizes: Nominal sizes indicated on drawings, adjusted to fit specified frame type.
- B. Doors: Insulated Metal Door.
 - 1. Face sheets: Minimum 24 gage thickness.
 - 2. Core: Polyurethane, foamed in place, without voids, density 2.0 pcf minimum, K-factor of 0.15 for minimum thermal transmittance.
 - 3. Factory-glazed.
 - 4. Finish: Factory primed with two part epoxy/polyester primer.
- C. Door Glazing: Dual insulating units.
 - 1. Outer pane of 1/8 inch thick clear tempered glass with low emittance coating on interior face, inner pane of 1/8 inch thick clear tempered glass, sealed Argon gas air space, total unit thickness 3/4 inch.
- D. Glazing Stops:
 - 1. For factory-glazing: Flush profile wood or steel integral stop assembly.

2.04 FRAME COMPONENTS

- A. Door and Frame Units: Pre-assembled and pre-hung.
 - 1. Frame: Solid wood, primed for field finishing, with brick mold where indicated on drawings and recessed channel for weatherstrip.
 - 2. Thresholds:
 - a. Aluminum with vinyl thermal-break at house/dwelling unit entrance door.
 - b. Aluminum without vinyl thermal-break at garage utility door.
 - 3. Weatherstrip: Vinyl-covered magnetic and compression type, extruded for head and jamb channel recess, and adjustable sweep at door bottom.
 - 4. Flashing as indicated on drawings.
- B. Hinges: Manufacturer's proprietary hinges, 4 inches x 4 inches by 0.098 inches leaf thickness.
 - 1. Types:
 - a. Entry Doors: Inswinging; standard removable pin. Outswinging; non-removable pin.
 - b. Fire-Rated Doors: Spring-loaded pin.

2. Finish: Zinc plated.
 3. Provide 1 hinge for each door reinforcement location, no less than 1-1/2 pair per door.
- C. Thresholds: All doors extruded aluminum, mill finish with safety ribs, with integral/thermal break. Ribbed extruded vinyl sweep across door bottom; 1/2" maximum height. Comply with ANSI A117.1, Section 404. Adjustable sweep at door bottom - adjust to provide continuous contact with threshold when door is closed.

2.05 FINISHING

- A. Steel:
1. Treat steel surfaces with chemical treatment to promote paint adhesion.
 2. Factory Primer Finish: Meet requirements of ANSI A250.10 and ISDI 106.
 3. Frame Color: Manufacturer's standard (Fredericksburg White).

PART 3 EXECUTION

3.01 EXAMINATION

- A. Have installer verify that project conditions are acceptable before beginning installation of frames; verify that completed openings to receive frames are of correct size and thickness.
- B. Correct unacceptable conditions before preceding with installation.

3.02 INSTALLATION

- A. Install jamb, head, and sill flashing as detailed on Drawings.
- B. Install frames in accordance with manufacturer's instructions, approved shop drawings, and requirements of ISDI 102; in addition, install frames for fire-rated openings in accordance with requirements of NFPA 80.
- C. Installation of door hardware is specified in Section 08 7100 - Door Hardware.
- D. Field finishing of factory-primed doors and frames is specified in Section 09 9000 Painting and Coating.
- E. Set threshold in continuous bed of sealant.
- F. Maintain alignment with adjacent work. Secure assembly to framed opening; plumb, square and without distortion. Shim as required.
- G. Place insulation in shim spaces around entire unit perimeter to maintain continuity of house thermal barrier and sound insulation.
- H. Install sealant and related backing materials between door frame and house, tightly and continuously.
- I. Provide drip cap per requirements of Section 07 6200- Sheet Metal Flashing and Trim.
- J. Specifications and standards for finish carpentry shall conform to Section 06 2000 - Finish Carpentry.

END OF SECTION 08 1713

SECTION 08 3613
OVERHEAD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Overhead sectional doors, electrically operated.
- B. Operating hardware and supports.
- C. Electrical controls.

1.02 RELATED SECTIONS

- A. Section 06 1000 - Rough Carpentry: Rough wood framing for door opening.
- B. Section 07 9005 - Joint Sealers: Sealing joints between frames and adjacent construction.

1.03 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- B. DASMA 102 - American National Standard Specifications for Sectional Overhead Type Doors; 2011.
- C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 PERFORMANCE REQUIREMENTS

- A. Wind Loads: Design and reinforce sectional overhead doors to withstand a 20 mph loading pressure.
- B. Air Infiltration: Maximum air infiltration shall be .37 cfm at 10 mph.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Show component construction, anchorage method, and hardware.
- C. Manufacturer's Installation Instructions: Include any special procedures required by project conditions.
- D. Operation Data: Include normal operation, troubleshooting, and adjusting.
- E. Maintenance Data: Include data for motor and transmission, shaft and gearing, lubrication frequency, spare part sources.
- F. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for warranty requirements.
- B. Correct defective Work within a 5-year period after Date of Substantial Completion.
- C. Warranty: Include coverage for electric motor and transmission.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Overhead Door: Product: "Series 180" with "Stockton 1" glazing panels of tempered glass; www.overheaddoornorthland.com.
- B. Other Acceptable Manufacturers (window style to match "Stockton 1"):
 - 1. Fimbel Door Corp: Product: "Olympus 500"; fimbel.com.
 - 2. Clopay Building Products Company, Inc: Product: "Value Plus Series"; www.clopaydoor.com.
 - 3. Midland: "RSP24"; www.midlandgaragedoor.com.
 - 4. Wayne-Dalton Corporation: "8000 Series"; www.wayne-dalton.com.

5. Amarr: "Heritage 2000"; www.amarr.com.
6. DoorLink; Product 511 Traditional Raised Panel with Stockton #397 windows; www.doorlinkmfg.com.
7. Substitutions: See Section 01 6000 - Product Requirements.

2.02 STEEL DOOR COMPONENTS

- A. Steel Doors: Stile and rail steel with solid panels; standard lift operating style with track and hardware; complying with DASMA 102, Commercial application.
 1. Door Nominal Thickness: 2 inches thick.
 2. Exterior Finish: Pre-finished with baked enamel of white color.
 3. Interior Finish: White vinyl liner.
 4. Glazed Lights: 4 glazed lights per panel, one row; set in place with resilient glazing channel.
 5. Rigid, polystyrene insulation "R" Value greater than 7.4.
 6. Operation: Electric.
 7. Door Panels: Flush steel construction; outer steel sheet of 0.0239 inch thick (24 ga.), raised standard panel design, wood grain texture; inner vinyl sheet of 0.125 inch thick, flat profile; core reinforcement of sheet steel roll formed to channel shape, rabbeted weather joints at meeting rails; insulated to "R" Value greater than 7.4.
- B. Glazing: tempered glass. Style: Overhead Door "Stockton 1" or matching design.

2.03 DOOR COMPONENTS

- A. Track: Rolled galvanized steel, 0.090 inch thick; 2 inch wide, continuous one piece per side; galvanized steel mounting brackets 1/4 inch thick.
- B. Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of galvanized steel; floating hardened steel bearing rollers, located at top and bottom of each panel, each side.
- C. Lift Mechanism: Torsion spring on cross head shaft, with braided galvanized steel lifting cables.
 1. For Manual Operation: Requiring maximum exertion of 25 lbs force to open.
- D. Sill Weatherstripping: Resilient u-shaped rubber strip, one piece; fitted to bottom of door panel, full length contact.
- E. Jamb Weatherstripping: Roll formed steel section full height of jamb, fitted with resilient weatherstripping, placed in moderate contact with door panels.
- F. Head Weatherstripping: EPDM rubber seal, one piece full length.
- G. Panel Joint Weatherstripping: Neoprene foam seal, one piece full length.

2.04 MATERIALS

- A. Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G60/Z180 coating, plain surface.
- B. Insulation: Rigid polystyrene "R" Value greater than 5.5.

2.05 ELECTRICAL OPERATION

- A. Electrical Characteristics:
 1. 1/3 hp, Liftmaster Model #1245R ; manually operable in case of power failure, transit speed of 12 inches per second.
 2. Other Acceptable Operators:
 - a. Genie; "Chain Glide PCG450".
 - b. Linear.
 3. 120 volts, single phase, 60 Hz.
- B. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70.
- C. Electric Operator: Center mounted draw bar assembly, adjustable safety friction clutch; brake system actuated by independent voltage solenoid controlled by motor starter; enclosed gear

driven limit switch; enclosed magnetic cross line reversing starter; mounting brackets and hardware.

- D. Safety Auto Stop/Reverse: Photoelectric eye with electronic reversing system at door opening.
- E. Control Station: Manufacturer's standard wall button.
 - 1. Surface mounted.
 - 2. Locate at as directed by Owner.
- F. Hand Held Transmitter: Digital control, resettable; 2 transmitters per opener.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install door unit assembly in accordance with manufacturer's instructions.
- B. Install door, track, and operating equipment complete with necessary hardware, jamb and head mold stops, anchors, inserts, hanger and equipment supports in accordance with final shop drawings, manufacturer's instructions, and specified herein.
- C. Fasten vertical track assembly to framing at not less than 24 inches o.c. Hang horizontal track from structural overhead framing with angle or channel hangers, welded and bolt-fastened in place. Provide sway bracing, diagonal bracing, and reinforcing as required for rigid installation of track and door operating equipment.
- D. Anchor assembly to wall construction and building framing without distortion or stress.
- E. Securely brace door tracks suspended from structure. Secure tracks to structural members only.
- F. Fit and align door assembly including hardware.
- G. Coordinate installation of electrical service. Complete power and control wiring from disconnect to unit components.

3.02 TOLERANCES

- A. Maximum Variation from Plumb: 1/16 inch.
- B. Maximum Variation from Level: 1/16 inch.
- C. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch from 10 feet straight edge.
- D. Maintain dimensional tolerances and alignment with adjacent work.

3.03 ADJUSTING

- A. Upon completion of installation, including work by other trades, lubricate, test and adjust doors to operate easily, free from warp, twist, or distortion and fitting weathertight for entire perimeter.

3.04 PROTECTION

- A. Protect installed products from damage during subsequent construction.
- B. Clean doors, frames and glazing.
- C. Remove temporary labels and visible markings.
- D. Do not permit construction traffic through overhead door openings after adjustment and cleaning.

END OF SECTION 08 3613

**SECTION 08 5313
VINYL WINDOWS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Vinyl-framed, factory-glazed windows.
- B. Factory fabricated tubular extruded plastic windows with operating sash.
- C. Window flashings.
- D. Operating hardware.

1.02 RELATED REQUIREMENTS

- A. Section 01 2300 - Alternates
- B.
- C. Section 07 9005 - Joint Sealers: Perimeter sealant and back-up materials.
- D. Section 12 3530 - Residential Casework: cultured marble sills.

1.03 REFERENCE STANDARDS

- A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights; 2022, with Errata (2023).
- B. AAMA 303 - Voluntary Specification for Rigid Polyvinyl Chloride (PVC) Exterior Profiles; 2023.
- C. AAMA 701/702 - Performance Specification for Pile Weatherstrips (AAMA 701) and Polymer Weatherseals (AAMA 702); 2023.
- D. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections; 2009.
- E. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.
- F. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).
- G. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2023).
- H. ASTM E547 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference; 2000 (Reapproved 2016).
- I. ASTM E1423 - Standard Practice for Determining Steady State Thermal Transmittance of Fenestration Systems; 2021.
- J. ASTM F588 - Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact; 2017 (Reapproved 2023).
- K. ASTM F2090 - Standard Specification for Window Fall Prevention Devices With Emergency Escape (Egress) Release Mechanisms; Current Edition.
- L. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2023.

1.04 PERFORMANCE REQUIREMENTS

- A. Forced Entry Resistance: Conform to ASTM F588 requirements for performance level 10 for window type A.
- B. System Design: Design and size components to withstand dead and live loads caused by pressure and suction of wind acting normal to plane of window. Operating force shall not exceed 20 lb. after sash is in motion in either direction.
- C. Uniform Load Structural: No member shall have permanent deformation of any mainframe, sash, panel, or sash member in excess of 0.4% of its span from a minimum uniform structural

test pressure of 37.5 psf. Test shall be in accordance with ASTM E330/E330M and shall include negative and positive loads.

- D. Compliance with AAMA 303 for PVC extrusions.
- E. Thermal Transmittance: Maximum U-value shall not exceed 0.27 with any Solar Heat Gain Coefficient (SHGC).
- F. Air Infiltration: Limit air infiltration through assembly to .15 cu ft/min/sq ft of wall area, measured at a reference differential pressure across assembly of 1.57 psf as measured in accordance with ASTM E283/E283M .
- G. Water Resistance: ASTM E547 (no leakage at 4.5 lb./s.f. test pressure).

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide component dimensions, anchors, fasteners, glass, internal drainage, and clear egress formula, storage and handling requirements, installation instructions, and operation and maintenance instructions..
- C. Shop Drawings: Indicate opening dimensions, framed opening tolerances, affected related work, and installation requirements.
- D. Manufacturer's Certificate: Certify that products of this section meet or exceed specified requirements. Include results of independent testing laboratory that windows to be provided meet or exceed specified performance requirements.
- E. Grade Substantiation: Prior to submitting shop drawings or starting fabrication, submit one of the following showing compliance with specified grade:
 - 1. Evidence of AAMA Certification.
 - 2. Evidence of WDMA Certification.
 - 3. Evidence of CSA Certification.
 - 4. Test report(s) by independent testing agency itemizing compliance and acceptable to authorities having jurisdiction.
 - 5. Evidence of Energy Star label for climate zone.
- F. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Installer Qualifications: Company specializing in performing of type specified and with at least three years documented experience.

1.07 PREINSTALLATION MEETING

- A. Conduct pre-installation meeting with manufacturer's representative, Owner, building official (invited), and other necessary parties to verify product requirements, substrate conditions, manufacturer's installation instructions, manufacturer's warranty requirements, and job-specific conditions as indicated in documents.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Protect finished surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond when exposed to sunlight or weather.
- B. Jig, brace, and box the window frame assemblies for transport to minimize flexing of members or joints.

1.09 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Vinyl Windows: Windows manufactured by Thermo-Tech shall be basis for design.
 - 1. Thermo Tech; Product Vinyl Classic Series with 3 1/4 inch frame depth.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.
 - a. Substitution requests during bidding shall declare that proposed substitutions are available in sizes indicated on drawings. Substitutions that do not declare this will be rejected.
 - 3. Unless otherwise specified for an individual product, supply all products from same manufacturer.

2.02 DESCRIPTION

- A. Vinyl Windows: Factory fabricated frame and sash members of extruded, hollow, ultra-violet-resistant, polyvinyl chloride (PVC) with integral color; with factory-installed glazing, hardware, related flashings, anchorage and attachment devices.
 - 1. Configuration: As indicated on drawings, with single hung and outward projecting awning sash,
 - 2. Color: White.
 - 3. Size to fit openings with minimum clearance around perimeter of assembly providing necessary space for perimeter seals.
 - 4. Operable Units: Double weatherstripped.
 - 5. System Internal Drainage: Drain to exterior side by means of weep drainage network any water entering joints, condensation within glazing channel, or other migrating moisture within system.
 - 6. Glazing Stops, Trim, Flashings, and Accessory Pieces: Formed of rigid PVC, fitting tightly into frame assembly.

2.03 PERFORMANCE REQUIREMENTS

- A. Grade: AAMA/WDMA/CSA 101/I.S.2/A440 requirements for specific window type:
 - 1. Performance Class (PC): LC.
 - 2. Performance Grade (PG): Equivalent to or greater than specified design pressure.
- B. Performance Validation: Windows shall comply with AAMA/WDMA/CSA 101/I.S.2/A440 performance requirements as indicated by having AAMA, WDMA, or CSA certified label, or an independent test report for indicated products itemizing compliance and acceptable by authorities having jurisdiction.
- C. Design Pressure: In accordance with applicable codes.
- D. Thermal Transmittance (U-value): Maximum U-factor of 0.27 with any SHGC. U factor value includes window glazing and frame system based on average window size required for project and determined in accordance with AAMA 1503, ASTM E1423, or NFRC 100 .

2.04 COMPONENTS

- A. Glazing: Insulated double pane, annealed glass, clear, low-E coated, argon filled, with glass thicknesses as recommended by manufacturer for specified wind conditions.
- B. Windows: Extruded, hollow, tubular, ultra-violet resistant polyvinyl chloride (PVC) with integral color; factory fabricated; with vision glass, related flashings, anchorage and attachment devices.
- C. Frame Sizes: 3-1/4 inch wide.
- D. Windows at sleeping rooms: Comply with emergency egress requirements of applicable building code. Windows must be supplied in sizes as indicated on drawings.
- E. Sash: Sash design and glazing stops to accommodate glazing of thickness specified; co-extruded dual durometer glazing stop seals; meeting rails with integral positive interlock.
- F. Color: To be selected from manufacturer's full line of standard colors.

- G. Weatherstripping: Weatherstripping shall be of quality to meet environmental exposure and specified performance requirements. Pile weatherstripping with vinyl inner leaf conforming to AAMA 701/702. Provide 2 continuous fin-type pile weatherstripping seals around perimeter of sash, including 2 at meeting rail, 1 additional pile seal at interior sill upstand.
- H. Locks: All windows are to be lockable in conformance with ASTM F588 , performance level 10. Local code may have requirements that exceed this standard; local code will govern in those instances. latch into groove in meeting rail. Keeper is not acceptable.
- I. Insect Screens: Aluminum, roll-formed frame of rectangular sections with baked-on acrylic coating; fit with adjustable hardware; nominal size full screen similar to operable glazed unit. Screens with spring loaded pins are not acceptable.
 - 1. Screen Mesh: Woven aluminum or fiberglass mesh, 14/18 mesh size/
- J. Sash balances: Provide constant-force or block-and-tackle balance hardware; attach mounting screws to engage at least 2 profile walls and/or metal reinforcement. Spiral balance hardware is not acceptable.
- K. Operable Sash Weatherstripping: Wool pile; permanently resilient, profiled to maintain weather seal in accordance with AAMA 701/702.

2.05 INSTALLATION MATERIALS

- A. Jamb Flashings: "StraightFlash", as manufactured by Tyvek.
- B. Sill Flashings: "Flexwrap" as manufactured by Tyvek.
- C. Sealant: Butyl rubber-based at all concealed joint conditions.

2.06 HARDWARE

- A. Sash lock: Lever handle and keeper with cam lock, provide at least one for each operating sash.
- B. Window Opening Control Devices (WOCD) (Layla's Law): Provide operable window sash hardware that limits openings to only allow passage of 4 inch diameter rigid sphere or less, and are easily releasable to fully open without use of keys, tools, or special knowledge.
 - 1. Product: Angel Ventlock; Roto Frank of America: Angel-ventlock.com.
 - 2. Reverse Retrofit - Single Action: Choose model based on window sash clearance.
 - 3. Color: As selected from manufacturer's full range of standard colors.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that openings are plumb and square and of proper dimension. Report frame defects or unsuitable conditions to the General Contractor before proceeding.
- B. Beginning of installation means acceptance of existing conditions.
- C. Do not begin installation until Preinstallation Meeting is held.
- D. Reject windows that do not have required labels of certification of compliance labels on them from AAMA, WDMA and / or CSA and Energy Star.

3.02 PREPARATION

- A. Prior to installing windows and doors, install jamb and sill flashing.
- B. Install 12 inch strip of flashing at sill. Fold membrane up onto the rough jamb over the face of sheathing and over sill. Install 12 inch strip of flashing at rough jamb and fold out onto face of sheathing. Staple. Refer to detailed instructions in drawings.

3.03 INSTALLATION

- A. Do not install windows that do not have required labels of certification of compliance labels on them from AAMA, WDMA and/or CSA and Energy Star.
- B. Install window unit assemblies in accordance with manufacturer's instructions and applicable building codes. Allow sufficient R.O. tolerance for jamb flashing. Slope rough sill to exterior.

- C. Window rough opening shall be fully jamb-flashed and pan-flashed as detailed in the drawings. Flashing shall be sealed to the exterior weather resistant barrier and window jamb and head fins shall be inter-taped to seal to flashing and to weather resistant barrier. All flashing and window fins shall be shingle-lapped and shall be fully watertight at completion of window installation.
- D. Use installation clips for pre-finished units. Do not nail through factory finish. Install extension jambs as required.
- E. Align window plumb and level, free of warp or twist, and maintain dimensional tolerances and alignment with adjacent work.
- F. Install corner gaskets and nail flanges.
- G. Install separate drip cap flashing at all window heads unless manufacturer certifies that integral fin performs as a drip cap.
- H. Adjust masonry openings to allow for following minimum shrinkage of wood: 1/4 inch at first floor, 1/2 inch at second floor, and 3/4 inch at third floor.
- I. Provide thermal isolation where components penetrate or disrupt building insulation. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- J. Install perimeter sealant and backing materials in accordance with Section 07 9005 - Joint Sealers.
- K. Install operating hardware. Install screens before completion of project.
- L. Adjust operating sash for smooth and easy operation; re-adjust at completion of project if necessary.
- M. Clean windows, remove visible labels; clean glass.
- N. Install Window Control Opening Devices
 - 1. Devices are not required at windows with sill heights greater than 24 inches above finished floor.
 - 2. Position devices so that operating sash of single hung window does not open beyond maximum allowed clear opening of 4 inches.

3.04 FIELD QUALITY CONTROL

- A. The Owner may, at their discretion, field test the windows for conformance with the stated standards.

3.05 ADJUSTING

- A. Adjust hardware for smooth operation and secure weathertight closure.

3.06 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.
- C. Cover windows, door, and frames during spray painting or other construction operations that might cause damage.
- D. Protect sills from damage by chemicals, paint and construction traffic.

END OF SECTION

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SECTION 08 7100 DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Hardware for all doors scheduled or indicated on drawings, including wood and hollow steel doors.
- B. Hardware is to include:
 - 1. Finish hardware.
 - 2. Hardware for fire-rated doors.
 - 3. Thresholds.
 - 4. Weatherstripping, seals and door gaskets.

1.02 RELATED REQUIREMENTS

- A. Section 06 2000 - Finish Carpentry: Wood door frames.
- B. Section 08 1416 - Flush Wood Doors.

1.03 REFERENCE STANDARDS

- A. BHMA A156.1 - Standard for Butts and Hinges; 2021.
- B. BHMA A156.18 - Standard for Materials and Finishes; 2020.
- C. DHI WDHS.3 - Recommended Locations for Architectural Hardware for Flush Wood Doors; 1993; also in WDHS-1/WDHS-5 Series, 1996.
- D. FS FF-H-106 - Hardware, builders'; locks and door trim-standard finishes for builders' hardware; 1974.
- E. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- F. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2016.
- G. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- H. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2012.
- I. UBC Std 7-2, Part II - Test Standard for Smoke- and Draft-Control Assemblies; International Conference of Building Officials; 1997.
- J. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.
- K. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.

1.05 DESIGN REQUIREMENTS

- A. Where items of hardware not definitely or correctly specified are required for completion of the Work a statement of such omission, error, or other discrepancy should be directed to the Owner, prior to the date specified for receipt of proposals, for clarification by addendum; or, furnish such items in the type and quality established by this specification, and appropriate to the service intended.

1.06 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Schedules:
 - 1. Immediately after award of contract submit a detailed vertical type hardware schedule for Owner's approval.
 - 2. Itemize hardware in the sequence and format established by this specification.

- a. List and describe each opening separately; include all doors with identical hardware, except hand, in a single heading. Include door number, room designations, degree of swing, and hand.
 - b. List related details; include dimensions, door and frame material, and other conditions affecting hardware.
 - c. List all hardware items; include manufacturer's name, quantity, product name, catalog number, size, finish, attachments, and related details where applicable.
3. When resubmittal of schedules are required, submit four copies of corrected schedules for review and approval.
4. Determine keying requirements, as directed by the Owner, and submit a detailed keying schedule for approval; resubmit the corrected schedule when required.
5. Submit manufacturer's templates: Furnish a copy of the approved hardware schedule and all pertinent templates or template information to each fabricator of material

1.07 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.
- B. Supplier Qualifications: Company specializing in supplying residential door hardware.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.
- B. Store hardware in dry surroundings and protect against loss and damage.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS FOR DOOR HARDWARE PRODUCTS

- A. Provide door hardware products that comply with the following requirements:
 1. Applicable provisions of federal, state, and local codes.
 2. ANSI / ICC A117.1.
 3. Applicable provisions of NFPA 101.
 4. Fire-Rated Doors: NFPA 80.
 5. All hardware on Fire-Rated Doors: Listed and classified by UL as suitable for the purpose specified and indicated.

2.02 KEYING

- A. Door Locks: Keyed differently for each house as directed by the Owner. Master all other locks.
- B. Supply keys in the following quantities:
 1. Four (4) keys per house.
- C. Each key to be stamped with a code.
- D. Ship or hand deliver keys to Owner.

2.03 LOCKS: SCHLAGE

- A. Exterior Locksets; AL - Series, Saturn.
- B. Deadbolts; B - Series, steel reinforcement plate and 1/8 inch x 3 inch screws.
- C. Combined Exterior Lockset and Deadbolt; "H" Series 110 Levon.
- D. Interior Locksets, Latchsets and Passage Sets; F - Series, Elan.
- E. Furnish lock types and functions specified in the hardware schedule, with the following provisions:
 1. Cylinders: 6 pin.
 2. Backsets: Verify with door supplier.
 3. Strikes:
 - a. Wrought box type for the inactive leaf of pairs of wood doors, or wood frames.
 - b. Lip length sufficient to protect trim, frame or inactive leaf.

- F. Magnetic Catches (closet door pairs): IVES 327.

2.04 CLOSERS

- A. Manufacturers; Surface Applied Closer:
 - 1. DORMA USA, Inc; 7200 Series: www.dorma.com/#sle.
 - 2. LCN, an Allegion brand; 1460 Series: www.allegion.com/us/#sle.
- B. Size per manufacturer's recommendation for exterior door. Door must close and latch with all weatherstrip in contact with frame and threshold.

2.05 WALL STOPS

- A. Furnish wall stop as applicable, for each door leaf. Provide appropriate length.
- B. Where wall stops are not applicable, furnish overhead stops, floor mount stops or other as required. Use hinge-mount stops only where no other type will work.

2.06 ACCESSORIES

- A. Furnish all necessary hardware accessories such as wood or machine screws, bolts, nuts, anchors, toggle bolts, and other fasteners, each of the type, size, material and finish for its intended purpose and each according to the material to which the hardware is being applied.

2.07 FINISHES

- A. Except where specified in the hardware schedule, finishes are specified in the table that follows.
- B. Apply finishes over base metals listed in the table.
- C. Finishes: Provide door hardware of same finish, unless otherwise indicated.
 - 1. Primary Finish: 626; satin chromium plated over nickel, with brass or bronze base material (former US equivalent US26D); BHMA A156.18.
 - 2. Secondary Finish: 626; satin chromium plated over nickel, with brass or bronze base material (former US equivalent US26D); BHMA A156.18, as appropriate.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.

3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and applicable codes.
- B. Install hardware on fire-rated doors and frames in accordance with applicable codes and NFPA 80.
- C. Use templates provided by hardware item manufacturer.
- D. Remove, cover or protect hardware after fitting until paint or other finish is applied; permanently install hardware after finishing operations are complete.
- E. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As listed in Schedule Schedule, unless otherwise noted: .
 - 1. For Wood Doors: Install in compliance with DHI WDHS.3 recommendations.
- F. Deliver to the Owner one complete set of installation and adjustment instructions, and tools as furnished with the hardware.

3.03 ADJUSTING

- A. Adjust work under provisions of Section 01 7000 - Execution and Closeout Requirements.
- B. Adjust hardware for smooth operation.
- C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.04 PROTECTION

- A. Protect finished Work under provisions of Section 01 7000 - Execution and Closeout Requirements.
- B. Do not permit adjacent work to damage hardware or finish.

3.05 SCHEDULE

- A. General Hardware Group Requirements:
 - 1. Provide a separate deadbolt lock for the following locations. Doors for each dwelling unit or house / detached garage shall be operable by the same key.
 - a. Exterior entrance doors.
 - b. Utility garage doors from garage to exterior.
 - 2. Provide a passage latchset for the following locations.
 - a. Exterior entrance doors.
 - b. Utility garage doors from garage to exterior.
 - 3. Provide wall mounted doorstop for all doors.
 - 4. Provide privacy latchsets for all bathrooms and one bedroom per unit.
 - 5. Provide passage latchsets for all interior doors except as otherwise indicated.
 - 6. Provide dummy pull at each leaf of closet door pairs. Provide roller latch at top of each leaf.
 - 7. Provide dummy pull at each leaf of closet door pairs. Provide magnetic latch at top of each leaf.
- B. Hardware Groups:
 - 1. Group 1 (Typical Unit Entry):
 - a. Butts by door supplier
 - b. Deadbolt B160
 - c. Latchset AL10S Saturn
 - d. Wall stop 060
 - e. Threshold by door supplier
 - f. Weatherstrip by door supplier
 - g. Sweep strip by door supplier
 - h. Eye viewer 1
 - 2. Group 3 (Garage Utility Door):
 - a. Butts by door supplier
 - b. Deadbolt B160
 - c. Latchset AL10S Saturn
 - d. Threshold by door supplier
 - e. Weatherstrip by door supplier
 - f. Sweep strip by door supplier
 - 3. Group 4 (Passage Doors and Single Closet Doors):
 - a. Butts by door supplier
 - b. Passage latchset F10S Elan
 - c. Wall stop 060
 - 4. Group 5 (Bath and Master Bedroom):
 - a. Butts by door supplier
 - b. Privacy latch F40S Elan
 - c. Wall stop 060
 - 5. Group 6 (Swinging Closet Door Pairs):
 - a. Butts by door supplier
 - b. Latchset a pair of dummy levers with trim
 - c. Catch magnetic catch for each door leaf at top of door; Ives 327
 - 6. Group 7 (Overhead Garage Door):
 - a. By door supplier
 - 7. Group 8 (Pocket Door)

- a. Pocket door kit, Type C single door, KN Crowder
- b. Door pull, 3/4" round, 8102 6" back to back mount, Ives

END OF SECTION

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SECTION 08 8313
MIRRORED GLASS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Glass mirrors.

1.02 RELATED SECTIONS

- A. Section 10 2800 - Toilet, Bath, and Laundry Accessories: Metal-framed mirrors.

1.03 REFERENCES

- A. ASTM C 1036 - Standard Specification for Flat Glass; 2001.
- B. GANA (TIPS) - Mirrors Handle with Extreme Care: Tips For the Professional on the Care and Handling of Mirrors; National Association of Mirror Manufacturers; 2004.

1.04 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements for submittal procedures.
- B. Product Data on Mirror Types: Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.

1.05 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Provide five year manufacturer warranty for reflective coating on mirrors and replacement of same.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Mirror Glass : ASTM C 1036, Type 1 transparent flat, Class 1 clear, Quality Q2 (mirror); conforming to FS DD-G-451D, with silvering, copper coating and organic protective coating with polished edges; 1/4 inches minimum thick.

2.02 GLAZING ACCESSORIES

- A. Mirror Attachment Clips: Knapp and Vogt # 277 and #278 chrome j-clips.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that openings for mirrored glazing are correctly sized and within tolerance.

3.02 INSTALLATION - GENERAL

- A. Install mirrors in accordance with NAMM recommendations and manufacturer's instructions for the substrate provided.
- B. Set mirrors plumb and level, free of optical distortion.
- C. Set mirrors with edge clearance free of surrounding construction including countertops or backsplashes.
- D. Frameless Mirrors: Set mirrors with a minimum of 4 clips in a tamperproof manner. Anchor rigidly to appropriate substrate.

3.03 CLEANING

- A. Remove labels after Work is complete.
- B. Clean mirrors and adjacent surfaces.

END OF SECTION 08 8313

**SECTION 09 2116
GYPSUM BOARD ASSEMBLIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Acoustic insulation.
- B. Joint treatment and accessories.
- C. Textured finish system.
- D. Accessories.

1.02 RELATED SECTIONS

- A. Section 01 9100 - Green Building Requirements: Low VOC requirements for adhesives and sealants.
- B. Section 06 1000 - Rough Carpentry: Building framing .
- C. Section 07 2100 - Thermal Insulation for thermal and acoustic insulation in exterior walls and plumbing walls.
- D. Section 07 9005 - Joint Sealers: Acoustic sealant.

1.03 REFERENCE STANDARDS

- A. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017 (Reapproved 2022).
- B. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing; 2003 (Reapproved 2017).
- C. ASTM C 630/C 630M - Standard Specification for Water-Resistant Gypsum Backing Board; 2000.
- D. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2023.
- E. ASTM C 919 - Standard Practice for Use of Sealants in Acoustical Applications; 1998.
- F. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.
- G. GA-216 - Application and Finishing of Gypsum Panel Products; 2024.
- H. UL (FRD) - Fire Resistance Directory; Current Edition.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on gypsum board.

1.05 REGULATORY REQUIREMENTS

- A. Conform to "UL Fire Resistance Manual" "Gypsum Association GA 600" and the Minnesota Building Code for fire rated assemblies as indicated on drawings.

1.06 DELIVERY, STORAGE AND HANDLING

- A. All delivery shall be delivered in their original unopened packages and stored in an enclosed shelter providing protection from damage and exposure to the elements. Damaged or deteriorated materials shall be removed from the premises.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. General: Comply with requirements of referenced standards and with gypsum board manufacture recommendations.
- B. Cold Weather Protection: When ambient outdoor temperatures are below 55 degrees F, maintain continuous, uniform, working temperature of not less than 55 degrees F for a minimum period of 48 hours prior to, during, and following application of gypsum board and joint treatment materials or bonding adhesives.

- C. Ventilation: Ventilate building spaces as required to remove water in excess of that required for drying of joint treatment material immediately after its application. Avoid drafts during dry, hot weather to prevent too rapid drying.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.

2.02 BOARD MATERIALS

- A. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 - 1. Thickness: 1/2" all locations unless otherwise indicated on drawings.
- B. Exposed Gypsum Wallboard: ASTM C 36/C 36M; sizes to minimize joints in place; ends square cut.
 - 1. Thickness: As indicated on the drawings.
 - 2. Edges: Tapered.
- C. Exposed Water-Resistant Gypsum Wallboard at wet walls (mold-resistant): ASTM C 630/C 630M; ends square cut.
 - 1. Application: At all wet areas 4 feet up wall and above tub/shower surrounds, except behind tile (at tile surrounds, cement board by tile installer).
 - 2. Edges: Tapered.
 - 3. Thickness: as indicated on the drawings.
 - 4. Edges: Tapered.
- D. At draftstops or pre-rock locations that may be exposed to weather during construction, exterior sheathing or mold-resistant board may be used in place of interior wallboard.

2.03 ACCESSORIES

- A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced. Insulation thickness as indicated in fire and sound test assemblies.
 - 1. Manufacturers:
 - a. Thermafiber: SAFB; www.thermafiber.com
 - b. Owens Corning: QuietZone; www.owenscorning.com
- B. Acoustic Sealant: Apply at wall-to-floor joint all exterior walls. ASTM C 919; non-hardening, non-skinning, for use in conjunction with gypsum board. Or provide USG Acoustical Sealant manufactured by USG Corporation, or Pecora BA-98 Acoustical Sealant manufactured by Pecora Corporation. At exposed locations provide Tremco acrylic latex caulk or Sonneborn Sonolac.
- C. Trim: Provide manufacturer's standard metal trim accessories, of the beaded type with face flanges for concealment in joint compound except where semi-finishing or exposed type is indicated. Provide corner beads, L-type edge trim beads, U-type trim beads, special L-kerf-type edge trim beads, and one-piece control beads.
- D. Edge Trim: Bead type(s) as detailed.
- E. Joint Materials: ASTM C475 and as recommended by gypsum board manufacturer for project conditions.
 - 1. Joint Tape: Perforated.
- F. Textured Finish Materials:
 - 1. Ceilings: Latex-based compound; plain. Provide SHEETROCK Unaggregated or Multi-Purpose Wall and Ceiling Texture manufactured by USG Corporation. Color and texture as selected by Owner.
 - 2. Walls: Latex-based compound; plain. Provide SHEETROCK Multi-Purpose Wall and Ceiling Texture manufactured by USG Corporation. Color and texture as selected by Owner.

- G. Screws: ASTM C 1002; self-piercing tapping type; cadmium-plated for exterior locations. If nails are specified in a UL assembly, screws may be substituted at the same spacing.
- H. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.
- I. Adhesive for attachment to wood or masonry: ASTM C 557.
- J. Access Doors and Panels.
 - 1. Drywall access doors
 - a. Door and frame fabricated from 16 gauge galvanized sheet steel.
 - b. Frame: One-piece construction with 1/4 inch mounting holes.
 - c. Door: Rounded safety corners with concealed hinge.
 - d. Latch: Screwdriver operated latch.
 - e. Hinge: Pivoting rod hinge. Provide continuous piano hinge for doors 24 inches or larger.
 - f. Size: As required to provide service access to shower plumbing valves or as indicated on drawings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.
- B. Inspection List: Prior to gypsum board installation, verify the following:
 - 1. Windows and doors are sealed to framing using caulks, foams, backer rod and/or similar.
 - 2. Window flashing is properly installed to shed water.
 - 3. All recessed lights beneath unconditioned spaces are air-tight and rated for insulated ceiling. All kitchen and bathroom fans are appropriately rated and exhausted to outside.
 - 4. Ductwork is sufficiently air-sealed.
 - 5. All vapor sealant, air sealant, and penetrations are completed as indicated on drawings.

3.02 ACOUSTIC ACCESSORIES INSTALLATION

- A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
- B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
 - 1. Place one bead continuously on substrate before installation of perimeter framing members.
 - 2. Place continuous bead at perimeter of each layer of gypsum board.
 - 3. In non-fire-rated construction, seal around all penetrations by conduit, pipe, ducts, and rough-in boxes.

3.03 BOARD INSTALLATION

- A. Comply with ASTM C 840 and ASTM C 840. Install to minimize butt end joints, especially in highly visible locations.
- B. Coordinate construction sequence to install pre-rock wallboard in areas between party walls, behind soffits, behind cross-walls, behind stair landings, at draft stops at proper time in framing sequence. Use exterior sheathing or mold-resistant board where temporarily exposed to weather.
- C. Isolate drywall work from abutting structural and masonry work. Position all ends and edges of all gypsum panels over framing members, except when joints are at right angles to framing members as in perpendicular application or when end joints are back-blocked. Use water resistant gypsum board at tub/shower surrounds at plumbing wall/chases. Omit vapor barrier at exterior walls behind water resistant gypsum board and provide weather resistant membrane.
- D. Apply gypsum panels first to the ceiling and then to the walls. Extend ceiling board into corners and make firm contact with top runner. To minimize end joints, use panels of maximum practical lengths. Fit ends and edges closely, but not forced together. Stagger end joints in successive courses with joints on opposite sides of a partition placed on different studs.

Accurately locate openings for mechanical/electrical devices.

- E. Where wall type shown on drawings shows a specific fire or sound rating by UL or other testing agency. Contractor shall comply with specific construction details as shown in the tested assembly as described by the testing agency.
- F. Attach panels to framing supports by power-driven screws. Space fasteners not less than 3/8 inches from edges and ends of panels and drive as recommended for specific fastening method. Drive fasteners in field of panels first, working towards ends and edges. Hold panel in firm contact with framing while driving fasteners. Drive fasteners heads slightly below surface of gypsum panels in a uniform dimple without breaking face paper. Avoid puncturing the vapor barrier during installation of wall board. Report any punctures or tears to General Contractor and repair as directed. Screw spacing must comply with listed UL assemblies. If substituted for nails, screws must be at same spacing as nails.
- G. Install trim at all internal and external angles formed by the intersection of either panel surfaces or other surfaces. Apply corner bead to all vertical or horizontal external corners in accordance with manufacturer's directions.
- H. Moisture Protection: Treat cut edges and holes in moisture resistant gypsum board with sealant.
- I. Install trim at all internal and external angles formed by the intersection of either panel surfaces or other surfaces. Apply corner bead to all vertical or horizontal external corners in accordance with manufacturer's directions.

3.04 MISCELLANEOUS INSTALLATIONS

- A. Direct Bonding: Comply with manufacturer's recommendations where gypsum board is indicated to be directly bonded to substrate.
- B. Acoustical Sealant: Where work is indicated as "sound retarding" or shown with an STC rating, apply acoustical sealant as recommended by manufacture. Install acoustic sealant at perimeter joints, behind control joints, around junction box/pipe/duct penetrations, and at the base of walls. Refer to Section 07 9005 for sealant requirements.
- C. Sound and Exterior Walls: Verify that fiberglass insulation and vapor barrier has been installed where shown, without gaps, and supported where necessary to prevent movement or dislocation before installing gypsum wall board.
- D. Wet Areas: Install moisture-resistant backing board where shown to receive thin-set tile and similar rigid applied finishes at tubs, showers and similar "wet" areas.
- E. Ceiling Soffits: Install system in accordance to manufacturer's instructions.

3.05 INSTALLATION OF TRIM AND ACCESSORIES

- A. Install trim at all internal and external angles formed by the intersection of either panel surfaces or other surfaces. Apply corner bead to all vertical or horizontal external corners in accordance with manufacturer's directions.
- B. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
- C. Corner Beads: Install at external corners, using longest practical lengths.
- D. Edge Trim: Install at locations where gypsum board abuts dissimilar materials and as indicated.

3.06 JOINT TREATMENT

- A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
- B. Finish gypsum board in scheduled areas in accordance with levels defined in ASTM C 840 and as scheduled below.
 - 1. Above Finished Ceilings Concealed From View: Level 1.
 - 2. Utility Areas and Areas Behind Cabinetry: Level 2.
 - 3. Textured Walls and Ceilings to receive a Flat or Eggshell Paint Finish: Level 3.
- C. Apply materials according to manufacturer's recommendations. Apply taping or all-purpose type compound to fastener depressions as the first coat. At areas to receive smooth finish,

follow with a minimum of two additional coats of topping or all-purpose compound. Allow 24-hour minimum drying between coats. Sand lightly between coats. Leave all depressions level with the plane of the surface at wet areas. Treat joints fastener heads, cut edges and penetrations in water-resistant backing board using water-resistant joint compound to comply with water-resistant joint compound manufacturer's directions.

- D. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
 - 1. Feather coats of joint compound so that camber is maximum 1/32 inch.
- E. Apply first coat to all bead trim and properly feather out from ground to plane of surface. Compound must be thoroughly dry and lightly sanded prior to application of second coat. Apply second and third coat in same manner as first coat, extending compound slightly beyond second coat and properly feathering from ground to plane or surface. Sand finish as necessary to provide a flat smooth surface ready for decoration. When sanding, take care not to roughen face paper. Finish surface shall provide a smooth and even surface ready for decoration.
- F. Apply first coat to all bead trim and properly feather out from ground to plane of surface. Compound must be thoroughly dry and lightly sanded prior to application of second coat. Apply second and third coat in same manner as first coat, extending compound slightly beyond second coat and properly feathering from ground to plane or surface. Sand finish as necessary to provide a flat smooth surface ready for decoration. When sanding, take care not to roughen face paper. Finish surface shall provide a smooth and even surface ready for decoration.

3.07 CLEANING

- A. Remove temporary coverings used to protect adjacent work.
- B. Remove drywall and joint compound dust, spillage, splatter, etc. promptly from doors frames, windows and other adjoining work. Repair all surfaces which have been damaged by drywall work.
- C. Textured Finish: Clean overspray from walls and other surfaces including any overspray of wall texture from finished ceiling texture.

3.08 FINISH LEVEL SCHEDULE

- A. Gypsum Board Finishing:
 - 1. All walls and ceilings, other than those described below, to receive fine orange peel spray texture finish.
 - 2. Walls and Ceilings in Garages: Fire-taped.
 - 3. Basement Ceilings: Taped and sanded only - no texture or paint.
 - 4. Bathroom Walls and Ceilings: Smooth.
 - 5. Kitchen Walls: Smooth. Field verify cut lines with Owner.
- B. Soffits to be finished same as adjacent wall.
- C. Taping of gypsum board is to be to the following ASTM C 840 Levels:
 - 1. Level 0: Not used
 - 2. Level 1: Fire-taped; Tape in joint compound at joints and interior angles. Tool marks and ridges acceptable.
 - 3. Level 2: Utility areas and areas behind cabinetry; Tape compound at joints and interior angles plus separate coat of compound at joints, angles, fasteners, and accessories. Tool marks and ridges acceptable.
 - 4. Level 3: Walls scheduled to receive textured wall finish; Tape compound at joints and interior angles plus two separate coats of compound at joints, angles, fasteners, and accessories. Compound shall be smooth and free of tool marks and ridges
 - 5. Level 4: Walls and ceilings scheduled to receive flat or eggshell paint finish; Tape compound at joints and interior angles plus three separate coats of compound at joints, angles, fasteners, and accessories. Compound shall be smooth and free of tool marks and ridges

6. Level 5: Walls and ceilings scheduled to receive semi-gloss or gloss paint finish; Tape compound at joints and interior angles plus three separate coats of compound at joints, angles, fasteners, and accessories. And a separate skim coat of compound over entire surface of gypsum board. Compound shall be smooth and free of tool marks and ridges

END OF SECTION

SECTION 09 6500
RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Resilient sheet flooring.
- B. Installation accessories.

1.02 RELATED SECTIONS

- A. Section 01 9100 - Green Building Requirements: Low VOC requirements for primers, adhesives and sealants.

1.03 REFERENCE STANDARDS

- A. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2014c.
- B. ASTM F925-13 - Standard Test Method for Resistance to Chemicals of Resilient Flooring.
- C. ASTM F1514 - Standard Test Method for Measuring Heat Stability of Resilient Flooring by Color Change, 2003 (Reapproved 2013).
- D. ASTM F2034 - Standard Specification for Sheet Linoleum Floor Covering; 2008 (Reapproved 2013).
- E. ASTM F2199 - Standard Test Method for Determining Dimensional Stability of Resilient Floor Tile after Exposure to Heat, 2009 (Reapproved 2014).
- F. BAAQMD 8-51 - Bay Area Air Quality Management District Regulation 8, Rule 51, Adhesive and Sealant Products; www.baaqmd.gov; current edition.
- G. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.
- H. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2015.

1.04 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
- C. Shop Drawings: Indicate seaming plan for each unit type.
- D. Selection Samples: Submit manufacturer's complete set of color samples for Owner's initial selection for each type of flooring material.
- E. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and rewaxing.

PART 2 PRODUCTS

2.01 SHEET FLOORING

- A. Linoleum Sheet Flooring: Homogeneous wear layer bonded to backing, with color and pattern through wear layer thickness:
 - 1. Manufacturers:
 - a. Forbo Flooring, Inc; Marmoleum: www.forboflooringna.com/#sle.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
 - 2. Minimum Requirements: Comply with ASTM F2034, Type corresponding to type specified.
 - 3. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648 or NFPA 253.
 - 4. Backing: Jute fabric.
 - 5. Thickness: 0.100 inch, minimum, excluding backing.
 - 6. Seams: Chemically bonded using seam sealer.

7. Pattern: Marbleized.
8. Color: To be selected by Architect from manufacturer's full range.

2.02 TILE FLOORING

- A. Luxury Vinyl Tile (LVT):
 1. Manufacturers:
 - a. Mannington Commercial; www.manningtoncommercial.com.
 - b. Tandus Centiva; www.tandus-centiva.com.
 - c. Parterre Flooring Systems; www.parterreflooring.com.
 - d. Bolyu Contract; www.bolyu.com.
 - e. American Biltrite; www.american-biltrite.com.
 2. Product Requirements:
 - a. Construction: Luxury vinyl plank, locking option available and beveled edges.
 - b. Finish: 20mil wearlayer or thicker. Quantum Guard HP finish.
 - c. Glue-down application.
 - d. Manufacturer Warranty: Minimum 5 year warranty.
 - e. Third Party Certifications:
 - 1) FloorScore.
 - 2) CRI Green Label Plus.
 - 3) ASTM E648, Standard Test Method for Critical Radiant Flux.
 - 4) ASTM F925 - Standard Test Method for Resistance to Chemicals of Resilient Flooring: Pass.
 - 5) ASTM F1514 - Standard Test Method for Heat Stability of Resilient Flooring by Color Change: Pass.
 - 6) ASTM F2199 - Standard Test Method for Determining Dimensional Stability of Resilient Floor Tile after Exposure to Heat. Pass.
 3. Product:
 - a. Mannington Commercial; Spacia Wood: www.manningtoncommercial.com.
 - b. Size: 6 x 36 inch.
 - c. Color: To be selected from the manufacturer's full range of standard colors and patterns.
 - d. Backing: Standard.
 - e. Substitutions: See Section 01 6000 Product Requirements.

2.03 ACCESSORIES

- A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.
- B. Primers, Adhesives, and Seaming Materials: Waterproof; types recommended by flooring manufacturer and compliant with SCAQMD Rule 1168..
- C. All adhesive products must be "Green Label" tested and certified.
- D. Moldings and Edge Strips: Metal.
- E. Vinyl Transition Strip: Johnsonite.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to subfloor surfaces.
- B. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

- A. Prepare subfloor surfaces as recommended by flooring and adhesive manufacturers.
- B. Coordinate with Section 06 2000 - Finish Carpentry for the installation of underlayment immediately prior to installing the resilient flooring.

- C. Remove subfloor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with subfloor filler to achieve smooth, flat, hard surface.
- D. Prohibit traffic until filler is cured.
- E. Clean substrate.
- F. Apply primer as required to prevent "bleed-through" or interference with adhesion by substances that cannot be removed.

3.03 INSTALLATION

- A. Starting installation constitutes acceptance of subfloor conditions.
- B. Install in accordance with manufacturer's instructions.
- C. Spread only enough adhesive to permit installation of materials before initial set.
- D. Fit joints tightly.
- E. Set flooring in place, press with heavy roller to attain full adhesion.
- F. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.
- G. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
- H. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.
- I. Maintain room temperature per manufacturer's recommendations.

3.04 SHEET FLOORING

- A. Spread only enough adhesive to permit installation of materials before initial set.
- B. Set flooring in place, press with heavy roller to attain full adhesion.
- C. Lay flooring with joints and seams parallel to longer room dimensions, to produce minimum number of seams. Lay out seams to avoid widths less than 1/3 of roll width; match patterns carefully at seams. Roll seams and match patterns.
- D. Chemically bond seams using seam sealer where indicated.
- E. Double cut sheet at seams.
- F. Lay flooring with tightly butted seams, without any seam sealer unless otherwise indicated.
- G. Chemically seal seams in sheet vinyl with manufacturer's seam sealer.
- H. Where floor finishes are different on opposite sides of door, terminate flooring under centerline of door.
- I. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated. After installation of flooring, secure metal strips with stainless steel screws. Secure resilient strips by adhesive.
- J. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

3.05 TILE FLOORING

- A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.
- B. Lay flooring with joints and seams parallel to building lines to produce symmetrical tile pattern.
- C. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated. Before installation of flooring, secure metal strips with stainless steel screws. Secure resilient strips with adhesive.

3.06 CLEANING

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.

- B. Clean in accordance with manufacturer's instructions.
- C. Clean sheet flooring in accordance with manufacturer's instructions.

3.07 PROTECTION

- A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION 09 6500

SECTION 09 6800

CARPETING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Carpet, stretched-in, with cushion underlay, and direct-glued.
- B. Accessories.

1.02 RELATED SECTIONS

- A. Section 09 6500 - Resilient Flooring for termination edging of adjacent floor finish.

1.03 REFERENCE STANDARDS

- A. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2005.
- B. CRI (CIS) - Carpet Installation Standard; Carpet and Rug Institute; 2009.
- C. CRI (GLP) - Green Label Plus Testing Program - Certified Products; www.carpet-rug.org; current edition.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Indicate seaming plan, method of joining seams, direction of carpet pile , location of edge moldings and edge bindings , for housing unit type.
- C. Samples: Submit two samples 27 x 18 inches in size illustrating color and pattern for each carpet and cushion material specified.
- D. Manufacturer's Installation Instructions: Indicate special procedures.
- E. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.
- F. Provide manufacturer product data describing physical performance and compliance with regulatory requirements.

1.05 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Carpet shall conform to the requirements of the Federal Housing Administration "minimum Standards for Carpeting and Cushioning", No. UM-44D, Type II, Class.
 - 2. Pad shall conform to FHA Standard UM-72.
 - 3. Carpet and pad are to be free of urea formaldehyde, Department of Commerce Standard DOC FF-70.
 - 4. All carpet, carpet pad, adhesive and sealant shall meet CRI "Green Label Plus" standard for VOC emissions. All products or product labels shall carry this label.

1.06 WARRANTY

- A. Provide manufacturer's warranty as follows:
 - 1. 5-year stain resistance warranty on carpet.
 - 2. 5-year performance warranty on carpet pad.
 - 3. 10- year performance warranty on carpet.

PART 2 PRODUCTS

2.01 CARPET

- A. Carpet; All Living Units: "Endless Natruals" 28 oz. Olefin dense textured loop, manufactured by Aladdin.
 - 1. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/450, maximum, when tested in accordance with ASTM E 84.
 - 2. Critical Radiant Flux: Minimum of 0.22 watts/sq cm, when tested in accordance with ASTM E 648 or NFPA 253.

3. Surface Flammability Ignition: Pass ASTM D 2859 (the "pill test").
4. Substitutions: See Section 01600 - Product Requirements.

2.02 CUSHION

- A. Cushion: Urethane:
 1. Nominal Thickness: 1/4 inch.
 2. Density: 8 lbs/cu ft.

2.03 ACCESSORIES

- A. Sub-Floor Filler: Type recommended by carpet manufacturer.
- B. Tackless Strip: Carpet gripper, of type recommended by carpet manufacturer to suit application, with attachment devices.
- C. Moldings and Edge Strips: See Section 09 6500 - Resilient Flooring, color as selected.
- D. Adhesives: Compatible with materials being adhered.
- E. Seam Adhesive: Recommended by manufacturer.
- F. Contact Adhesive: Compatible with carpet material; releasable type.
- G. All adhesives and sealants must be "Green Label" tested and certified.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that sub-floor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive carpet.
- B. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

- A. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler.
- B. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.
- C. Fill cracks, holes, and voids in subfloor, and thoroughly clean surfaces. Prime concrete according to the adhesive manufacturer's recommendations.
- D. Surfaces to receive carpet shall be thoroughly cured and dry, broom clean, and free of dirt, grease, oil, paint, and mortar and plaster droppings. Surfaces of concrete shall be smooth and dense and free of dust. Test new concrete for excessive moisture content according to the carpet manufacturer's recommendations before starting work.

3.03 INSTALLATION - GENERAL

- A. Starting installation constitutes acceptance of sub-floor conditions.
- B. Install carpet and cushion in accordance with manufacturer's instructions and CRI Carpet Installation Standard.
- C. Carpet shall be installed by skilled mechanics experienced in this type of installation. Take care to protect adjacent materials from damage.
- D. Install typical living unit carpet with a pad and tackless strips.
- E. Verify carpet match before cutting to ensure minimal variation between dye lots.
- F. Lay out carpet and locate seams in accordance with shop drawings:
 1. Locate seams in area of least traffic, out of areas of pivoting traffic, and parallel to main traffic.
 2. Do not locate seams perpendicular through door openings.
 3. Align run of pile in same direction as anticipated traffic and in same direction on adjacent pieces.
 4. Locate change of color or pattern between rooms under door centerline.
 5. Provide monolithic color, pattern, and texture match within any one area.

- G. Install carpet tight and flat on subfloor, well fastened at edges, with a uniform appearance.
- H. Install carpet in as long lengths as possible to hold cross seams to a minimum. Install carpet in each area so that grain is in one direction. Joints shall be straight with pieces butted tightly together and pattern properly matched.
- I. Fit carpet neatly to walls, columns, casework and equipment and adjacent finish flooring. Extend carpet into closets. All carpet edges that abut an adjacent floor of a different level from the face of the carpet shall be finished with carpet edging.
- J. All edges cut for seaming must be treated with a seam sealer. The sealer is to be applied along the edge of the carpet at the point where the face yarn goes into the back. Do not depend on multipurpose adhesive to wick up into seams from the floor.
- K. With regard to patterned carpet, once the patterns are matched and both edges are butted together, apply a bead of latex to both edges.

3.04 CLEANING

- A. Remove excess adhesive from floor and wall surfaces without damage.
- B. Clean and vacuum carpet surfaces.

END OF SECTION 09 6800

SECTION 09 9000
PAINTS AND COATINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Scope: Finish all interior and exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:

1.02 RELATED SECTIONS

- A. Section 01 9100 - Green Building Requirements: Low VOC requirements for interior primers and paints.
- B. Section 07 4623 - Engineered Wood Siding: Solid PVC trim
- C. Section 09 2116 - Gypsum Board Assemblies.

1.03 REFERENCE STANDARDS

- A. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2014.
- B. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials; 2007.
- C. GreenSeal GS-11 - Paints and Coatings; 2013.
- D. South Coast Air Quality Manangement District Rule 1113.

1.04 DEFINITIONS

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Samples: Samples of stained finishes and natural finishes on sample of actual wood or other substrate (such as Hardi siding) to be painted after preliminary color selection but before final painting begins.
- C. Painter shall expect to submit up to 3 samples of interior colors and up to 10 samples of exterior colors. NOTE that there will be two exterior color schemes and each scheme will have a trim color and up to 3 siding/shake colors. Owner will select which buildings get each color scheme.
- D. Provide data on products to be supplied describing physical performance characteristics; colors available and compliance with regulatory requirements.

1.06 REGULATORY REQUIREMENTS

- A. Flame spread ratings shall be in accordance to H.U.D. MPS 405-8.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.
- B. Paints, Stains, Sealers and Fillers:
 - 1. Base Manufacturer: Sherwin Williams; www.sherwin-williams.com.
 - 2. Other Acceptable Manufacturers:
 - a. Diamond Vogel: www.diamondvogel.com.
 - b. Benjamin Moore & Co: www.benjaminmoore.com/#sle.
- C. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PAINTS AND COATINGS - GENERAL

- A. Interior primers, paints and coatings shall comply with SMAQMD Rule 1113.
- B. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.

1. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 2. Supply each coating material in quantity required to complete entire project's work from a single production run.
 3. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
- C. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- C. Test shop-applied primer for compatibility with subsequent cover materials.
- D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 1. Gypsum Wallboard: 12 percent.
 2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
 3. Interior Wood: 15 percent, measured in accordance with ASTM D4442.
 4. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to coating application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- D. Surfaces: Correct defects and clean surfaces which affect work of this section. Remove or repair existing coatings that exhibit surface defects.
- E. Seal surfaces that might cause bleed through or staining of topcoat.
- F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- G. Concrete and Unit Masonry Surfaces to be Painted: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.
- H. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.
- I. Uncorroded Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by hand wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.
- J. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
- K. Interior Wood Surfaces to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer

has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.

- L. Exterior Wood Surfaces to Receive Opaque Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior calking compound after prime coat has been applied. Back prime concealed surfaces before installation.
- M. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with clear sealer.
- N. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION

- A. Exterior Wood to Receive Opaque Finish: If final painting must be delayed more than 2 weeks after installation of woodwork, apply primer within 2 weeks and final coating within 4 weeks.
- B. Apply products in accordance with manufacturer's instructions.
- C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- D. Apply each coat to uniform appearance.
- E. Sand wood and metal surfaces lightly between coats to achieve required finish.
- F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- G. Wood to Receive Transparent Finishes: Tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.
- H. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.
- I. Application shall be by brush, roller or spray according to manufacturer's instructions. If spray application is used the surface must be back rolled.
- J. Touch-ups: Where due to the type of surface and/or type of paint, touch-up is visible, repaint the entire surface (i.e. gypsum board, wall-to-wall).
- K. Supply suitable primer to jobsite for use by siding installers (all cut ends of siding to be primed).

3.04 SCHEDULE - SURFACES TO BE FINISHED

- A. Do Not Paint or Finish the Following Items:
 - 1. Items fully factory-finished unless specifically noted.
 - 2. Fire rating labels, equipment serial number and capacity labels.
- B. The following is an outline of items to be finished. The outline is general and is not intended as a complete schedule.
 - 1. Painting of exterior wood including any non-clad trim, soffits, fascia, and miscellaneous exterior wood. Exterior trim to be brushed not sprayed. All trim to be back-primed prior to installation.
 - 2. Shop painting of exterior PVC solid trim. Touch up cuts and otherwise as required in field.
 - 3. Painting all exterior metal without a factory finish including metal doors, metal door frames, mechanical equipment, electrical equipment and meter housings.
 - 4. Staining and varnishing of interior wood that is not prefinished or indicated to be painted including doors and frames, handrails, cut end of prefinished woodwork, field cut edges of interior doors, miscellaneous interior hardwood trim, etc.
 - 5. Painting of all interior, non-prefinished wood.
 - 6. Painting of all gypsum board where scheduled.
 - 7. Painting of all mechanical and electrical work without a factory finish exposed in finished rooms including ceiling and wall grilles, and surfaces of electrical cabinets
 - 8. Painting all interior and exterior ferrous metal without factory finish including stairs, metal railings, corner protection angles, metal doors and frames, etc.

9. Painting of flashing exposed in the finish work except for flashing having a painted factory finish.
 10. Painting of metal entry doors (accent color).
 11. PVC and metal pipes, stacks, and vents that penetrate roof, including roof jack or flashing used at penetration (includes plumbing stacks, HVAC inlets and outlets).
 12. Labeling of all storm drains or storm inlets with a painted stencil that reads, "Caution - Leads to Streams and Rivers!"
- C. Paint the surfaces described below under Schedule - Paint Systems.
1. Exterior Wood (trim, moldings, panels, columns, etc.):
 - a. 1 coat A-100 Exterior Oil Wood Primer.
 - b. 2 coats SuperPaint Exterior Latex Satin.
 2. Exterior Metal (verify metal type):
 - a. 1 coat pro Industrial Pro Industrial Pro-Cryl Universal Primer.
 - b. 1 coat Direct-to-Metal Enamel (EXCEPT provide 2 coats at metal doors).
 3. Exterior Solid PVC trim:
 - a. 2 coats Super Paint Exterior Acrylic Latex Paint - satin finish.
 4. Interior Metal - Painted (verify metal type):
 - a. 1 coat Pro Industrial Pro-Cryl Universal Primer (unless shop painted).
 - b. 1 coat Industrial Enamel 100 (EXCEPT provide 2 coats at doors).
 5. Metal Mechanical/Electrical Equipment at finished spaces:
 - a. 1 coat Pro Industrial Pro-Cryl Universal Primer.
 - b. 1 coat Industrial Enamel 100.
 6. Interior Gypsum Board (all bath and lavatory areas, walls, and bath ceilings and all kitchen walls):
 - a. 1 coat ProGreen 200 Interior Latex Wall Primer.
 - b. 2 coats ProGreen 200 Interior Latex Semi-Gloss.
 7. Interior Gypsum Board (all other areas including orange peel textured ceilings):
 - a. 1 coat ProGreen 200 Interior Latex Wall Primer.
 - b. 2 coats ProGreen 200 Interior Latex Eg-shel (color to be other than ceiling white).
 - c. All ceilings to be ceiling white.
 8. Interior Wood Trim to match prefinished (doors, casing and base to be supplied prefinished)
 - a. 3 coats Wood Classics Waterborne Polyurethane Varnish.
 9. Interior Concrete or Concrete Block
 - a. 1 coat PrepRite Block Filler.
 - b. 2 coats Duration Home Interior Latex Satin.
 10. Exterior PVC (vent pipes at roof)
 - a. Krylon "Fusion" or equivalent. Follow manufacturer's specifications.
 - b. Alternate: XIM primer #1143 and top coat of exterior acrylic satin finish.

SECTION 10 2800
TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Accessories for residential bathrooms.

1.02 RELATED SECTIONS

- A. Section 06 1000 - Rough Carpentry for placement of concealed anchor devices.
- B. Section 06 2000 - Finish Carpentry: for installation of accessories.
- C. Section 08 8313 - Mirrored Glass.
- D. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2022.
- E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- F. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2023.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on accessories describing size, finish, details of function, attachment methods.
- C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

1.04 COORDINATION

- A. Coordinate the work with the placement of internal wall reinforcement to receive anchor attachments.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Products listed are made by Bradley Corporation; www.bradleycorp.com.
- B. Other Acceptable Manufacturers:
 - 1. American Specialties, Inc: www.americanspecialties.com.
 - 2. Gamco: www.gamcousa.com.
 - 3. Bobrick Washroom Equipment, Inc: www.bobrick.com.
 - 4. Basco: www.bascoinc.com.
 - 5. Nutone (medicine cabinets).
 - 6. Substitutions: See Section 01 6000 - Product Requirements.
- C. All items of each type to be made by the same manufacturer.

2.02 MATERIALS

- A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
 - 1. Grind welded joints smooth.
 - 2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.
- B. Stainless Steel Sheet: ASTM A666, Type 304.
- C. Stainless Steel Tubing: ASTM A269, Type 304 or 316.
- D. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.
- E. Fasteners, Screws, and Bolts: Hot dip galvanized, tamper-proof , security type.

- F. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.03 FABRICATION

- A. Weld and grind smooth joints of fabricated components.
- B. Form exposed surfaces from single sheet of stock, free of joints.
- C. Back paint components where contact with building finishes will cause electrolysis.
- D. Shop assemble components and package complete with anchors and fittings.
- E. Provide steel anchor plates, adapters, and anchor components for installation.
- F. Hot-dip galvanize exposed and painted ferrous metal and fastening devices.
- G. Provide steel anchor plates and anchor components for installation building finishes.
- H. Stamped names or labels on exposed faces of toilet and bath accessory units are not permitted, however unobtrusive labels indicating manufacturer and model number are required on surface not exposed to view.
- I. Surface mounted accessories: Fabricate units with tight seams and joints, exposed edges rolled. Hang doors or access panels with continuous piano hinge or minimum of two 1-1/2 inch pin hinges of same metal as unit cabinet. Provide concealed anchorage wherever possible.
- J. Recessed mounted accessories: Fabricate units of all welded construction, without mitered corners. Hang doors or access panels with full length stainless steel piano hinge. Provide anchorage which is fully concealed when unit is closed.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify exact location of accessories for installation.
- C. Verify that field measurements are as indicated on drawings.
- D. Beginning of installation means acceptance of existing conditions.

3.02 PREPARATION

- A. Deliver inserts and rough-in frames to site for timely installation.
- B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

- A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.
- B. Install plumb and level, securely and rigidly anchored to substrate.
- C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.
- D. Mounting Heights and Locations: as follows:
 - 1. As indicated on drawings, verifying exact location with Owner.

3.04 SCHEDULE

- A. Provide the following items for each bathroom.
 - 1. Toilet Paper Holder: Bradley 5084; ASI 7305-S; Basco 1630-S; Bobrick B-6857; Gamco 5161.
 - a. One (1) by each toilet.
 - 2. Robe Hooks: Bradley 9114; ASI 7340-S; Basco 1644-S; Bobrick B-6707; Gamco 5153.
 - a. One (1) in each room containing tub or toilet.
 - 1) Mount on swing doors at 68 inches above finished floor.
 - 2) Mount adjacent on wall adjacent to pocket doors but not where door pocket is located.

3. Shower Curtain Rod: Bradley 9538 1" O.D.; ASI 1224; Basco 1200B/1213B; Bobrick 1224; GamcoOne.
 - a. One (1) per tub - concealed mounting type.
 - b. Mounting heights at tubs: 80 inches above finished floor.
 - c. Mounting height at showers: 74 inches above finished floor.
4. Towel Bars: Bradley 9054 Stainless 3/4" square; ASI 7360-S; Basco 1641-S; Bobrick B-6737; Gamco 5151.
 - a. Two (2) 24 inch each room with tub or shower.
 - b. One (1) 24 inch in each half bath.
5. Recessed Medicine Cabinet: White enamel box, plate glass mirror with stainless frame. Bradley 9663; ASI 8337; Basco 375 PW; Bobrick B-397; NuTone #478FS 14" x 24" R.O.
 - a. Install as follows unless indicated otherwise on drawings.
 - b. One (1) by each dwelling unit vanity.
 - c. Mounting heights:
 - 1) Conventional units: 73 inches to top of rough opening.
 - 2) Accessible units: 65 inches to top of rough opening.

END OF SECTION

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SECTION 10 4416
FIRE EXTINGUISHERS AND ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fire extinguishers.
- B. Accessories.

1.02 RELATED SECTIONS

- A. Section 06 1000 - Rough Carpentry: Wood blocking product and execution requirements.

1.03 REFERENCES

- A. NFPA 10 - Standard for Portable Fire Extinguishers; National Fire Protection Association; 2002.
- B. UL (FPED) - Fire Protection Equipment Directory; Underwriters Laboratories Inc.; current edition.

1.04 PERFORMANCE REQUIREMENTS

- A. Conform to NFPA 10.
- B. Provide extinguishers classified and labeled by Underwriters Laboratories Inc. for the purpose specified and indicated.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide extinguisher operational features.
- C. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Fire Extinguishers and Accessories:
 - 1. J.L. Industries, Inc.; "Cosmic, model 5E."
- B. Other Acceptable Manufacturers:
 - 1. Buckeye.
 - 2. Johnson-Lee.
 - 3. JL Industries, Inc: www.jlindustries.com.
 - 4. Kidde.
 - 5. Larsen's Manufacturing Co: www.larsensmfg.com.
 - 6. Norris Industries.

2.02 FIRE EXTINGUISHERS

- A. Dry Chemical Type: Cast steel tank, with pressure gage.
 - 1. Class 2A-10BC.
 - 2. Finish: Baked enamel, red color.

2.03 ACCESSORIES

- A. Extinguisher Brackets: Formed steel, chrome-plated.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Secure rigidly in place.
- C. Place extinguishers fully charged on wall brackets.

3.02 SCHEDULES

- A. Provide one (1) fire extinguisher per house. Install in closet near the back entrance.

END OF SECTION 10 4416

SECTION 10 5500
POSTAL SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Single family home mailbox.

PART 2 PRODUCTS

2.01 MAIL BOX

- A. Manufacturers:
 - 1. Salsbury Industries: www.mailboxes.com.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.
- B. Mail Boxes: Provide products approved for United States Postal Service delivery.
 - 1. Salsbury model #4620 - basis of design
 - 2. Materials: Electro-Galvanized 20 guage steel.
 - 3. Finish: Powder coat in color selected by Owner from manufacturer's standard colors.
 - 4. Unit Types and Sizes: 11"W x 14.5" H x 3.5" D

PART 3 EXECUTION

3.01 INSTALLATION

- A. Verify with owner the location for the installation
- B. Install postal specialties in accordance with approved shop drawings, manufacturer's instructions, and U.S. Postal Service requirements.
- C. Adjust and lubricate door hardware to operate properly.

END OF SECTION 10 5500

SECTION 10 5615
WIRE STORAGE SHELVING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Vinyl or epoxy coated ventilated shelving.

1.02 RELATED SECTIONS

- A. Section 06 1000 - Rough Carpentry.
- B. Section 06 2000 - Finish Carpentry.
- C. Section 09 2116 - Gypsum Board Assemblies.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's catalog data, detail sheets, and specifications.

1.04 DESIGN REQUIREMENTS

- A. Shelving shall support 75 pounds per square foot.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of design:
 - 1. ClosetMaid; www.closetmaid.com. Product "Total slide" at hanging shelves and "Close mesh" at linen shelving with fixed mount hardware system.
- B. Other Acceptable Manufacturers:
 - 1. Rubbermaid; www.rubbermaid.com.
 - 2. Schulte Co.; www.schultestorage.com.
- C. Substitutions: See Section 01 6000 - Product Requirements.
- D. Provide all storage shelving from a single manufacturer.

2.02 MATERIALS

- A. Steel Wire: Basic cold drawn, Grade C-1006; average tensile strength over 100,000 psi; coated.
- B. Wire Coating: Proprietary heavy-duty polyvinyl chloride (PVC) formula resin or epoxy, plasticizers, stabilizers, pigments, and other additives.
 - 1. Thickness: 9 to 11 mils.
 - 2. Classification: No ingredients listed as hazardous per OSHA 29CFR1910.1017.

2.03 MANUFACTURED UNITS

- A. Wire Shelving: Coated steel wire, 5/8 to 1 inch o.c. incremental cross-deck spacings. Clothes closet shelf to have free slide hanger rod.
- B. Provide storage shelving at location shown on the drawings, and as follows:
 - 1. Shelf and rod for closets shall be 12 inches deep, other storage shelving for linen, pantry etc. shall be either 12 or 16 inches as indicated on drawings. Provide intermediate support brackets for shelving longer than 3'-0".

2.04 ACCESSORIES

- A. Wall Clips.
- B. Side Wall Brackets.
- C. Support Brackets.
- D. Poles.
- E. Wall anchors.

- F. End caps.
- G. Pole Clips.
- H. Down clips.
- I. Shelf stops.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Cut shelves 1/2 inc shorter than actual wall measurements; cap all exposed ends.
- B. Install shelving plumb and level at heights indicated in accordance with shop drawings and manufacturer's printed installation instructions.
- C. Place wall clips No. 910, 911 every 10 to 12 inches on level line.
- D. Install side wall brackets No. 932 and shelf stops No. 969 on same level line as wall clips, centered on the front rods of shelves. Support shelves 36 inches maximum with side wall brackets, support brackets, or poles.
- E. Drill holes where required using sharp bit; do not punch.
- F. Drywall: Drill 1/4 inch hole, insert No. 910 or 911 wall clip. Use No. 8 pin to expand anchor.
- G. Wood: Drill 1/4 inch hole into wood, secure wall clip with No. 8 x 1 inch screw or secure pole clip No. 978 directly to wood with No. 8 x 1-1/4 inch screws.
- H. Brackets:
 - 1. Install standards vertically no more than 24" apart on studs.
 - 2. Install horizontal tracks level, secured with screws or mollies in studs or drywall; use hanging adapters to connect wall standards for hanging.
 - 3. Attach shelf brackets with SuperSlide, Heavy Duty, Linen, Shelf and Rod and Close Mesh 12-inch or 16-inch decking.
- I. Shelf Supports:
 - 1. Place shelf support brackets No. 1164, 1166, or 1180 vertically to the shelf, attach with No. 954 or 955 wall anchors.
 - 2. Install down clips No. 981/978 or cable clips No. 612 with 1/4 inch anchor on the back rod behind every support bracket.
 - 3. 36 inches o.c. maximum.
- J. Pole: Use pole clip #978 for linen shelving and #977 for shelf + rod shelving on pole #117 or #118.
- K. Use No. 120 corner support brackets on all corner "butt" joints.
- L. For wall to wall installation, use lightning end bracket No. 932 or 933; drill 1/4 inch holes, and secure with No. 8 pins.

3.02 CLEANING

- A. As work proceeds, maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris related to this work.
- B. Upon completion of installation, clean all surfaces that have become soiled during installation.

END OF SECTION 10 5615

**SECTION 11 3013
RESIDENTIAL APPLIANCES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Kitchen appliances.
- B. Laundry appliances.

1.02 RELATED SECTIONS

- A. Division 26 - Electrical. Electrical connections for appliances.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's data indicating dimensions, capacity, and operating features of each piece of residential equipment specified.

1.04 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Warranty: All appliances shall have a minimum one year warranty.
- C. Provide two year manufacturer warranty on garbage disposer.

PART 2 PRODUCTS

2.01 KITCHEN APPLIANCES

- A. Provide Equipment Eligible for Energy Star Rating: Energy Star Rated.
- B. Refrigerator:
 - 1. Free standing, top-freezer, 18 cu ft total capacity, frost-free defrost, up-front temperature controls, 3 adjustable glass shelves in fresh food cabinet, food door bins with gallon storage, 2 crisper drawers, 1 snack drawer, wire step shelf in freezer, stainless steel finish, Energy Star labeled, fit in 33" W x 69" H x 33" D opening.
 - 2. GE: www.geappliances.com.
 - 3. Whirlpool: www.whirlpool.com.
- C. Range:
 - 1. Free standing 30" wide electric coil-element range and oven. Manual cleaning, 4 cooktop coils (three 6 inches, one 8 inches). Glass window in oven door. Oven light. Broiler pan with grate, stainless steel finish.
 - 2. GE: www.geappliances.com.
 - 3. Whirlpool: www.whirlpool.com.
- D. Microwave with Range hood:
 - 1. Vented to exterior. 30" wide, cooktop light, 2-speed fan with 160 cfm min., removable cleanable grease filter. stainless steel finish.
 - 2. GE: www.geappliances.com.
 - 3. Whirlpool: www.whirlpool.com.
- E. Dishwasher:
 - 1. Undercounter model, 24 inches width, with 5 cycles including water-saver cycle, manual dial control. stainless steel exterior finish. Must be Energy Star rated.
 - 2. GE: www.geappliances.com.
 - 3. Whirlpool: www.whirlpool.com.
- F. Disposal:
 - 1. In-sink-erator "Badger 5" (no substitutions). 1/2 Horsepower heavy duty motor.
- G. Heat Shield (grease shield):
 - 1. Install on wall behind each range and at sidewall when range is adjacent to sidewall. Stainless steel finish.
 - 2. Broan manufacturer; width to match range "EP" or "SP" Series.

2.02 LAUNDRY APPLIANCES

- A. Provide Equipment Eligible for Energy Star Rating: Energy Star Rated.
- B. Clothes Washer: Top-loading stationary.
 - 1. Size: Large Capacity
 - 2. Controls: Solid state electronic
 - 3. Cycles: Include normal
 - 4. Motor Speed: Single-speed
 - 5. Features: include optional second rinse, bleach dispenser, fabric softener dispenser, self-cleaning lint filter, sound insulation, and end of cycle signal
 - 6. Finish: Painted steel, color white.
 - 7. Manufacturers:
 - a. Frigidaire Home Products: www.frigidaire.com.
 - b. GE Appliances: www.geappliances.com
 - c. Whirlpool Corp.: www.whirlpool.com
 - d. Substitutions: See Section 01 2513 - Product and Substitution Requirements.
 - 8. Clothes Dryer: Electric, stationary.
 - a. Size: Large capacity
 - b. Controls: Solid state electronic, with electronic moisture-sensing dry control.
 - c. Temperature Selections: One.
 - d. Cycles: Include normal, permanent press, knit/delicate, and air only.
 - e. Features: Include interior light, reversible door, sound insulation, and end of cycle signal.
 - f. Finish: Painted steel, color white.
 - g. Manufacturers:
 - 1) Frigidaire Home Products: www.frigidaire.com
 - 2) GE Appliances: www.geappliances.com
 - 3) Whirlpool Corp.: www.whirlpool.com
 - 4) Substitutions: See Section 01 2513 - Product and Substitution Requirements

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify utility rough-ins are present and correctly located.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide cords with plugs.
- C. Anchor built-in equipment in place.

3.03 ADJUSTING

- A. Adjust operating equipment to efficient operation.

3.04 CLEANING

- A. Remove packing materials from equipment.
- B. Wash and clean equipment.

END OF SECTION 11 3100

SECTION 12 2113
LOUVER BLINDS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Slat louver blinds, horizontal slats.
- B. Operating hardware.

1.02 RELATED SECTIONS

- A. Section 06 1000 - Rough Carpentry: Concealed wood blocking for attachment of headrail brackets.

1.03 REFERENCE STANDARDS

- A. WCMA A100.1 - Safety of Corded Window Covering Products; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data indicating physical and dimensional characteristics.
- C. Shop Drawings: Indicate opening sizes, tolerances required, method of attachment, clearances, and operation.
- D. Samples: Submit 2 samples, 3 inch long illustrating slat materials and finish, color, cord type and color.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Horizontal Louver Blinds:
 - 1. Hunter Douglas; Product "Celebrity": www.hunterdouglas.com.
 - 2. Levolor Contract; Product "Monaco": www.levolorcontract.com/#sle.
 - 3. Bali; Product "Customizer": www.baliblinds.com.
 - 4. Substitutions: See Section 01 6000 Product Requirements.

2.02 BLINDS AND BLIND COMPONENTS

- A. Horizontal Louver Blinds:
 - 1. Blinds: Horizontal slat louvers hung from full-width headrail with full-width bottom rail; manual control of raising and lowering by cord with full range locking; blade angle adjustable by control wand; complying with WCMA A100.1.
 - 2. Metal Slats: Spring tempered pre-finished aluminum; square slat corners, with manufacturing burrs removed.
 - a. Width: 1 inch.
 - b. Thickness: 0.006 inch.
 - c. Color: As selected.
- B. Accessory Hardware: Type recommended by blind manufacturer.

2.03 FABRICATION

- A. Field measure to verify actual sizes and opening variations.
- B. Horizontal Dimensions: Fabricate blinds to fit within openings with uniform edge clearance of 1/4 inch.
- C. Vertical Dimensions: Fill openings from head to sill[]
- D. At openings requiring multiple blind units, provide separate blind assemblies with space of 1/4 inch between blinds, located at window mullion centers.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not start installation before openings are finished and all finishes have been completed; do not install until painting is completed.
- B. Verify that openings are ready to receive the work.
- C. Ensure structural blocking and supports are correctly placed.
- D. Field measure finished openings prior to ordering or fabrication.

3.02 INSTALLATION

- A. Install horizontal blinds at all single-hung, casement, and awning windows.
- B. Install blinds in accordance with manufacturer's instructions.
- C. Secure in place with flush countersunk fasteners.
- D. Place intermediate head supports for blinds over 60 inches wide or 50 square feet in area.

3.03 INSTALLATION TOLERANCES

- A. Maximum Variation of Gap at Window Opening Perimeter: 1/4 inch.
- B. Maximum Offset From Level: 1/8 inch.

3.04 ADJUSTING

- A. Adjust blinds for smooth operation.

3.05 CLEANING

- A. Clean blind surfaces just prior to occupancy.

3.06 SCHEDULE

- A. All exterior windows.

END OF SECTION 12 2113

SECTION 12 3530
RESIDENTIAL CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Kitchen cabinets.
- B. Kitchen countertops.
- C. Vanity cabinets.
- D. Vanity countertops.
- E. Casework hardware.

1.02 RELATED REQUIREMENTS

- A. Section 01 9100 - Green Building Requirements: Low VOC requirements for adhesives and composite wood certification requirements.

1.03 REFERENCE STANDARDS

- A. KCMA A161.1 - Performance and Construction Standard for Kitchen and Vanity Cabinets; 2012.
- B. Kitchen Cabinet Manufacturers Association (KCMA) Environmental Stewardship Program (ESP) Certification.
- C. NEMA - National Electric Manufacturers Association Publication LD3.
- D. California 93120 Phase 2 certification for composite wood.
- E. South Coast Air Quality Management District Rule 1113: Requirements for coatings, primers and paints.
- F. South Coast Air Quality Management District Rule 1168: Requirements for sealant and adhesives.

1.04 SUBMITTALS

- A. See Section 01 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide component dimensions and construction details.
- C. Shop Drawings: Indicate casework locations, large scale plans, elevations, clearances required, rough-in and anchor placement dimensions and tolerances.
- D. Samples: Submit two , 6 inches x 6 inches inch in size, illustrating each color of finish.
- E. Manufacturer's Certificate: Certificate showing that casework is in compliance with no formaldehyde use in the construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design - Residential Casework: Smart (www.smartcabinetry.com) "Dover" style.
 - 1. Panel-style doors with wood veneer flat panel.
 - 2. Solid 1/2" drawers with dovetail corner construction
 - 3. 3/8" plywood or 1/2" furniture board side and back cabinet box panels
 - 4. 6-way adjustable hinges on all doors
 - 5. 3/4" X 1-1/2" solid wood face frames
 - 6. Solid wood drawer fronts.
 - 7. KCMA ESP Certified.
- B. Substitutions - See Section 01 6000 Product Requirements.
- C. Manufacturers shall offer at least 3 choices of light-to-medium Maple finishes. Final selection by owner.

2.02 HARDWARE

- A. Hardware:

1. Drawer and Door Pulls: Stanley Satin Aluminum, model number 348311, satin aluminum or brushed chrome, wire pulls, 4 inches wide.

2.03 FABRICATION - GENERAL

- A. All casework shall conform to ANSI/KCMA A161.1 Standards and shall bear the seal indicating conformance to this standard.
- B. All composite wood in fabricated components must be certified as compliant with California 93210 Phase 2, or, if using composite wood products that do not comply with California 93210 Phase 2, seal all exposed edges and sides with low VOC sealants.
- C. All sealants and adhesives shall comply with SCAQMD Rule 1168.
- D. Primers, paints and coating shall comply with SCAQMD Rule 1113.
- E. Shop assemble casework for delivery to site in units easily handled and to permit passage through building openings.
- F. Fabricate corners and joints without gaps or inaccessible spaces or areas where dirt or moisture could accumulate.
- G. Kitchen cabinets shall be 34-1/2" box height (36" to countertop).
- H. Vanity cabinets to be 31-1/2" box height. Provide offset sink where shown.

2.04 FABRICATION - CABINETS

- A. Provide factory finished casework with maple facing, maple box face front and melamine lined interior. All shelves in wall units shall be adjustable. Provide bottom panel for base cabinets. Exposed ends of casework shall have a finished panel. Provide matching filler pieces. Casework shall be manufactured without the use of added urea formaldehyde or shall be treated and sealed in a manner preventing emission of formaldehyde. Finish shall be as selected by the Owner from the manufacturer's standard finishes.
- B. Drawers shall have 2 slides and tracks with a drawer stop that allows drawer removal. Drawers to be full depth and shall have dovetail joints. Provide wire pulls on all doors and drawers. Base shelves to be 1/2 depth.
- C. Provide matching prefinished wood trim at kick space and base at exposed ends and backs.
- D. Provide matching prefinished trim for top of wall at underside of all overhanging countertops and for top edge of all upper cabinets.
- E. Provide fillers where required so that doors and drawers do not conflict with hardware at corners.
- F. Provide solid panel or fixed drawer front in any area where electrical switch or outlet is mounted.

2.05 FABRICATION - PLASTIC LAMINATE COUNTERTOPS AND WALL CAPS

- A. Provide plastic laminate faced countertops with rolled edges and coved backsplashes at kitchens. Provide sidesplash as necessary. Core material for countertops shall be particle board or hardwood faced veneer plywood, 3/4 inch thick. Plastic laminate shall be a postformable grade, .042 inch thick, complying with NEMA LD3. Color shall be as selected by the Owner from plastic laminate manufacturer's full line of standard colors. Make cutouts for plumbing/electrical devices.
- B. Countertops that overhang the cabinet shall be fully solid-blocked below with 3/4 inch material so that no void remains between cabinet and countertop.
- C. Countertop backer: Provide 0.020" phenolic backer sheet on underside of countertops to comply with Green Communities requirements.

2.06 FABRICATION - CULTURED MARBLE COUNTERTOPS AND WINDOW SILL

- A. Provide cultured marble countertops with integral sink at bathroom vanities. Color shall be as selected by the Owner from the manufacturer's standard colors. Countertops shall be as manufactured by Artistic Marble, Central Marble, Spartan Manufacturing, Halux, Designer Cultured Stone, Imperial, or Lippent. Countertops shall be minimum 3/4 inch thick and have 4

inch high back and side splashes with an integral oval lavatory bowl. Vanities shall conform to HUD Bulletin # 73. Vanity tops to be 22" deep. Finish shall be matte.

- B. Window sills shall be same material as vanity countertops. Lip shall overhang finished wall by 3/4 inch at room side. Seal joints at window and jambs.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify adequacy of support framing.

3.02 INSTALLATION

- A. Install casework, components and accessories in accordance with manufacturer's instructions.
- B. Use anchoring devices to suit conditions and substrate materials encountered.
- C. Set casework items plumb and square, securely anchored to building structure.
- D. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Use filler strips; not additional overlay trim for this purpose.
- E. Close ends of units, back splashes, shelves and bases.
- F. Finished back panels at islands and peninsula shall include wall base trim at floor. Provide blocking at floor behind dishwasher so bottom of panel has continuous support along floor.
- G. Install wood molding at top of sheetrock or finish panel under all overhanging countertops.
- H. Install wood molding at top edge at all upper cabinets where cabinets butt against soffit and ceiling.

3.03 ADJUSTING

- A. Adjust doors, drawers, hardware, fixtures, and other moving or operating parts to function smoothly.

3.04 CLEANING

- A. Clean casework, countertops, shelves, and hardware.

END OF SECTION 12 3530

**SECTION 23 0000
MECHANICAL DESIGN-BUILD**

PART 1 - GENERAL

1.01 DESIGN-BUILD BUILD GENERAL CONDITIONS

- A. The Contractor shall be responsible for defining the performance and design criteria for portions of the Project that are being delivered by means of a design-build delivery method.
- B. The Contractor shall be responsible for any act of omissions related to the design and construction of design-build components and systems.
- C. When systems are being provided on a design-build basis and the work is required by law to be performed by a licensed professional, the system design shall be engineered by a licensed professional engineer with expertise in the specific building type being designed. The engineer shall act as the responsible charge as defined by the State of Minnesota and shall "determine design policy, including technical questions, advises with client, superintends subordinates during the course of work and, in general the person whose professional skill and judgment are embodied in the plans, design and advice involved in the work." It is the responsibility of the design-build engineer to define and design the system both to the applicable codes and as necessary for the specific building type and intended use.
- D. The Architect shall not be responsible for the adequacy or completeness of the design-build services, and the Architect shall be entitled to reasonably rely on information provided by the design-build engineers with respect to the size, clearance, and support requirements of the design-build components.
- E. The Owner's review of design-build components and systems is limited to basic integration into the Project and its aesthetics. The Design-Build Engineer is responsible for the design and review of all components and shall notify the Owner of the need to modify any portion of the Project design necessary to incorporate any portion of the related system assemblies.
- F. Design-build engineers employed by the Contractor, by any Subcontractor or by any Material Supplier for work as a part of this Project shall carry appropriate coverage for errors and omissions insurance.

1.02 SECTION INCLUDES

- A. Products, assemblies, and methods as listed below and as necessary to complete installation of other items specified in the Project Manual.
- B. All applicable provisions of General and Supplementary Conditions and all requirements in the Project Manual.
- C. All connections to site utilities for the project.
- D. HVAC systems for the project.
- E. Plumbing systems for the project.
- F. Coordinate installation with General Contractor for Radon Mitigation, Section 31 2113.

1.03 RELATED SECTIONS

- A. Section 31 2113 - Radon Mitigation: Coordination of radon mitigation system.
- B. Section 33 4100 - Subdrainage: Perforated pipes for radon mitigation.

1.04 CONDITIONS OF THE CONTRACT

- A. General:
 - 1. These specifications are meant as an outline only. The Contractor shall be responsible for providing engineered drawings and specifications for review by the Owner and shall meet all applicable codes. Contractors shall obtain necessary permits and arrange for inspections. Equipment shall be installed in conformance with manufacturer's recommendations. Contractor shall attend preconstruction meeting with Contractor and Owner prior to commencing work.

2. Design of HVAC and plumbing systems must comply with and supply documentation as required for the Enterprise Green Communities Criteria for green affordable housing development. HVAC design must comply with the Air Conditioning Contractor of America Manual, Parts J and S. These standards are adopted by Minnesota Housing and information is available at www.mnhousing.gov/housing.
3. The units in this project are to meet (or exceed) the code requirements under the 2020 MN Residential Code (2018 IRC w/ MN amendments) .

1.05 SCOPE OF WORK

- A. The Contractor shall be responsible for communication with local jurisdictions and utility providers to verify their requirements and specifications.
- B. The Contractor shall be responsible for the coordination, connection to and/or reconnection of site utilities. Refer to civil plans for sanitary and water service.
 1. Underground telephone, electric, cable TV, and gas connections.
 2. Electric and gas metering.
 3. Provide any necessary trenching or backfilling.
- C. Coordinate all penetrations of exterior walls and all equipment mounted on exterior walls with the General Contractor. All such items must use mounting blocks in the siding.
- D. Owner will be seeking Energy Star Qualified Homes, Version 3.1 certification. Mechanical contractor shall complete the HVAC System Quality Installation Contractor Checklist and shall perform all procedures, calculations, and testing necessary to complete the checklist.
- E. The Contractor shall be responsible for the design and coordination of a heating system including but not limited to the following:
 1. Submittals: The HVAC Contractor shall prepare heat loss/heat gain calculations and final system design size to meet the requirements of the building as described in the plans and specifications. Provide operating and instruction manuals for all equipment including a catalogue of spare parts.
 2. Quality Assurance: MN code shall be the standard reference for all design temperatures. Contractor to submit energy calculations with permit application package.
 3. General Notes:
 - a. All duct runs shall be located within floor ceiling assembly to the greatest extent possible. All soffit locations shall be approved by owner.
 - b. Verify location of mechanical equipment for clearances and access to inspection and maintenance panels before fixing equipment in place. Immediately notify General Contractor of conflicts with other fixed equipment or structure.
 - c. HVAC Contractor to design duct systems to locate ductwork within chases, walls, and floor-ceiling spaces to the maximum extent possible.
 - d. Install furnace and ductwork as indicated and according to manufacturer's instructions and code requirements. Do not alter structural integrity of framing members. Provide all grills and louvers required for complete installation. Seal all ductwork joints with duct mastic. All supply and return ducts are to be covered and sealed until after final clean-up.
 - e. HVAC Contractor is responsible for all cutting, adjustments and patching and repair necessary to accomplish work. The Contractor must identify and provide any access panels necessary or required for the operation or maintenance of the HVAC systems.
 - f. All ducts penetrating fire rated wall or ceilings must have fire dampers equal to the rating of the wall or ceiling.
 - g. Air diffusers must be anchored in place in an approved manner. Flange flush with finished surface.
 - h. Heating ducts shall not be installed in exterior unit walls or attic spaces or other unheated spaces.
 - i. Any permanent equipment used during construction shall be cleaned to "as new" condition prior to turning over to the Owner.
 - j. Coordinate installation of devices (e.g. kitchen vents) penetrating exterior walls with the installation of mounting boxes, air barriers and other mounting devices. All

- devices shall be on backer boards.
- k. Seal all openings in HVAC system (except for normal service panels and access doors).
- l. Where possible, all roof jacks and flashings shall be dark color to blend with shingle color and minimize on-site painting.
- m. All stacks, vents, HVAC intake and exhaust pipes through roof shall be cut so that they have a uniform finished height of 2 feet above shingles.
- 4. Radon Mitigation System: The Contractor shall coordinate with General Contractor installation of radon mitigation system components including but not limited to the following:
 - a. Installation of underslab perforated collection pipes.
 - b. Vertical vents up to roof in locations indicated on unit plans.

1.06 REFERENCES

- A. ENERGY STAR Qualified Homes, Version 3.1 HVAC System Quality Installation Contractor Checklist. See Section 01 - 9200 Energy Star Qualified Homes, Version 3.1 HVAC System Quality Installation Contractor Checklist
- B. Environmental Protection Agency WaterSense program.

1.07 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

PART 2 PRODUCTS

2.01 HVAC MATERIALS

- A. Forced air heating and air conditioning system (all dwelling units):
 - 1. Provide an Energy Star qualified gas furnace (95 AFUE, or better), sealed-combustion with multi-stage burner (two stages, minimum) and variable speed fan. Furnace to work properly with thermostats to provide default low-heat and low speed operation stepping progressively to higher heat and higher fan speeds if thermostat is not satisfied within a defined time period. Acceptable models: Goodman GMV95; Trane XV95; Lennox G71MPP; Carrier Infinity 96.
 - 2. Provide air cooled condensing units (14 SEER minimum). Condensers shall have galvanized metal louvers (not mesh) with powder coat finish. Acceptable manufacturers include Trane, Lennox, and Goodman. Provide 30"x30"x2" UV resistant plastic air conditioner condensing unit pad.
 - 3. Provide supply and return ductwork materials and accessories that meet current code requirements. Duct system shall be sized, designed, and installed using latest ANSI/ACCA Manual D, J and S. Provide documentation for Manual D calculations. System and work includes grills and coordination of cutting and patching. System shall be thermostatically controlled and balanced. Duct leakage not to exceed 4.0 CFM/100 SF (mastic sealant). Do not locate ductwork in unconditioned spaces.
 - 4. The furnace filter shall be external to the furnace in easily accessible filler rack with cover. Provide new Aprilaire 2410 Merv 13 with one replacement filter provided per unit at project turnover. Any filters used during construction shall also be Merv 13.
 - 5. Provide Energy Star rated programmable thermostat.
 - 6. Provide gas supply to furnaces.
 - 7. Contractor shall provide certification of gas input rate settings, temperature rise adjustments, thermostat anticipator settings and safety controls operation for each unit.
 - 8. Return air system shall not be a central return only, but shall draw from bedrooms and other living areas. Provide one return from within each bedroom.
 - 9. Outside combustion air duct/fresh air connected to unit or return air sized per code.
 - 10. Provide Energy Recovery Ventilator (ERV). ERV(s) shall have capacity to provide code required air changes for both continuous and total ventilation mandated by the code. The system shall be balanced so that outside air intake is balanced withing 10 percent of air exhausted to the exterior. Acceptable models: Panasonic Whisper Comfort FV-04VE1.
 - 11. Required ventilation and make up air to all units. Minimum 8 air changes/hr in bath.

- B. Each dwelling unit bathroom containing a toilet to have a low-sone exhaust fan.
 - 1. Bathroom exhaust fans to be Energy Star rated with 50 cfm minimum ventilation capacity and one sone, maximum sound rating.
 - a. Panasonic Whisper Green FV-05VK3 .
 - 2. Operation: Fan shall be switched on with bathroom light and switched off by after a delay of 10 minutes.
 - 3. All fans shall be ducted to exterior. All fans shall be installed with flexible couplings and rigid straight duct runs as indicated in manufacturer's printed instructions. Installed fans shall not produce noise in excess of manufacturer's listed rating.
- C. Dryer vents with magnetic closer at laundry. Extend dryer vents to maximum of 1'-6" above finished floor. Dryer vent pipe to be smooth metal duct (not flexduct).
- D. Range hood exhaust ducting to exterior.
- E. All vents, conduit, pipes, or jacks in walls with siding must be mounted on blocks. All meters, switchgear, boxes and connection boxes, in walls with siding, must be mounted on blocks. Coordinate all locations with General Contractor before installing any work.

2.02 PLUMBING MATERIALS

- A. The Contractor shall be responsible for the design coordination and installation of a plumbing system that includes the following:
 - 1. Scope of Work: All plumbing materials and equipment necessary to complete the plumbing system in accordance with all local and state codes.
 - a. WaterSense: Toilets, showers and all sink faucets shall be WaterSense labelled.
 - 2. Submittals: Provide manufacturer's data and specifications as requested. General Contractor and plumbing subcontractor are to prepare a layout of vents and supply lines and verify with Owner prior to starting work.
 - 3. General Notes:
 - a. Verify location of plumbing system for clearance and access to controls for inspection and maintenance before fixing system in place. Immediately notify General Contractor of conflicts with other fixed equipment or structure. All parts of the plumbing system except fixtures must be completely concealed unless otherwise noted (exceptions - at laundry, at Mechanical Room).
 - b. Plumbing Contractor is responsible for all excavation, fill, backfill, cutting, adjustments, patching and repair necessary to accomplish work. No structural members may be cut without the written permission of the Owner. The plumbing Contractor must identify and provide any access panels required for the operation and maintenance of the plumbing system.
 - c. Plumbing Contractor is responsible for the plumbing system meeting all local, and applicable codes and ordinances. System must be installed in accordance with licensed journeyman's plumbing practice.
 - d. Plumbing Contractor is to coordinate all street connections including all excavation, removal, replacement and repair to yards, walks, curbs and streets. Owner will be responsible for paying the city tapping fee. The meter setting fee as well as any other connection fees shall be paid by the plumbing contractor
 - e. All parts of the plumbing system, unless otherwise noted, must be installed within the insulated building envelope - protected from freezing. Notify the Owner of any structural or building conditions, which prevent this.
 - f. Verify the location of all plumbing fixtures with the dimensions shown on the architectural plans.
 - 1) Locate and run supply and waste pipes to sinks located on outside wall in floor or under concrete slab in lieu of in wall.
 - 2) Surface mount supply and waste piping to washing machines located on exterior walls only in lieu of in wall.
 - g. Seal around any potential attic bypasses (pipe penetrations) using caulk or foam.
 - h. There shall be 1 water meter per unit.
 - i. All hot and cold water piping within buildings shall be insulated.

B. Index to Materials:

1. Water Heaters: Provide sealed combustion water heater with electronic ignition by A.O. Smith ProMax GPVT-40 series or Rheem PDV40. (Note: "American Water Heater" brand sealed combustion unit not acceptable to Owner) Provide one per dwelling unit.
2. Shut-off at each fixture (sinks, water closets, and hose bibs).
3. Kitchen Fixtures:
 - a. Two compartment stainless steel - 33 x 22 x 9 inches deep, 20 gage, self-rimming with sound absorbing undercoating and single control faucet with sprayer: Delta #B4410LF with sprayer and 2.0 gallons per minute flow rate aerator; shall be Watersense no substitutions on faucet.
 - b. Installation of garbage disposal and dishwasher.
4. Bath Fixtures:
 - a. Tub: Warm Oasis TSF 6030, or Aquatic #6030-SM
 - 1) Size: 60 x 31.25 x 19.25 inches.
 - 2) Finish: Gelcoat with smooth walls and textured bottom.
 - b. Shower: Oasis Legacy SH-4834, 1-piece
 - 1) Size: 48 x 35.25 x 75.75 inches.
 - 2) Finish: Gelcoat with smooth walls and textured bottom.
 - c. Shower/tub fittings: Diverter spout, single lever pressure balanced ball joint, Watersense-labeled, 2.0 gpm max. showerhead and escutcheon: Delta #T13H232. Drain pop up waste and overflow: Watco #601LTPVCCP.
 - d. Water Closet: 1.28 gallons per flush, Watersense labeled, maximum. Kohler K3577. Seat: Heavy duty solid plastic equal to Bemis #1100TT or Beneke 500TM.
 - e. Lavs in Vanities: Cultured marble, integral - see Section 12 3530.
 - f. Lavatory Faucet: Delta 22C301; Watersense-labeled, Faucet to be limited to 1.5 gallons per minute with aerator.
5. Laundry Fixtures:
 - a. Laundry Tub: 23x23 fiberglass tub with legs. Mustee #17F with rough brass laundry tub faucet, and PVC trap or equal.
6. Clothes washer connections include water shutoffs and waste in laundry area. Guy Gray B-200 TS or Oatey 38878.
7. Gas service for water heaters.
8. Floor drains by laundry and furnace areas.
9. All cleanouts located in walls shall be flat plates, flush with wall.
10. Provide dielectric unions at dissimilar metals. Install all water heaters with dielectric unions.
11. Exterior Sillcocks: Cast brass, frost free: Woodford Model #17.
 - a. Two per house. Location to be determined by owner.
12. Exposed waste and water pipe insulation at all wall-mount lavs.
13. All below-slab plumbing to be type "K" copper. In lieu of copper the Contractor may opt to provide "Wirsbo" domestic water distribution system in concealed areas (i.e.-all through wall piping to remain copper).
14. Water pipes shall be insulated with 1/2" 'ethafoam' preformed tubular insulation. Use preformed corners or lace mitered corners.
15. Provide and install sump basins - install flush with finish floor.
 - a. Basin shall be fully sealed to the concrete slab.
 - b. Basin cover shall have a transparent vision panel, be fully sealed to basin and shall be removable to service the pump. Covers shall be able to be completely resealed to basin.
16. Provide and install sump pumps and piping for discharge to grade.
 - a. Discharge pipe shall be sealed to the basin cover.
17. Provide and install perimeter draitile at footings.
 - a. Draitile perforated and solid pipes and socks are specified in 33 4100 - Subdrainage.
18. Provide and install underslab radon perforated collection pipe and solid vent pipe to roof.

- a. Perforated radon collection pipes are specified in 33 4100 - Subdrainage.
- b. Solid vent pipes for radon venting are specified in 31 2113 - Radon Mitigation

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

END OF SECTION

**SECTION 26 0000
ELECTRICAL DESIGN-BUILD**

PART 1 - GENERAL

1.01 DESIGN-BUILD BUILD GENERAL CONDITIONS

- A. The Contractor shall be responsible for defining the performance and design criteria for portions of the Project that are being delivered by means of a design-build delivery method.
- B. The Contractor shall be responsible for any act of omissions related to the design and construction of design-build components and systems.
- C. When systems are being provided on a design-build basis and the work is required by law to be performed by a licensed professional, the system design shall be engineered by a licensed professional engineer with expertise in the specific building type being designed. The engineer shall act as the responsible charge as defined by the State of Minnesota and shall "determine design policy, including technical questions, advises with client, superintends subordinates during the course of work and, in general the person whose professional skill and judgment are embodied in the plans, design and advice involved in the work." It is the responsibility of the design-build engineer to define and design the system both to the applicable codes and as necessary for the specific building type and intended use.
- D. The Architect shall not be responsible for the adequacy or completeness of the design-build services, and the Architect shall be entitled to reasonably rely on information provided by the design-build engineers with respect to the size, clearance, and support requirements of the design-build components.
- E. The Owner's review of design-build components and systems is limited to basic integration into the Project and its aesthetics. The Design-Build Engineer is responsible for the design and review of all components and shall notify the Owner of the need to modify any portion of the Project design necessary to incorporate any portion of the related system assemblies.
- F. Design-build engineers employed by the Contractor, by any Subcontractor or by any Material Supplier for work as a part of this Project shall carry appropriate coverage for errors and omissions insurance.

1.02 SECTION INCLUDES

- A. Products, assemblies and methods listed below and as necessary to complete installation of other items specified in the Project Manual.
- B. Electrical systems for the project.

1.03 RELATED SECTIONS

- A. Section 31 2113 - Radon Mitigation: Power and light for future fans for radon mitigation system vent pipes.

1.04 CONDITIONS OF THE CONTRACT

- A. General:
 - 1. These specifications are meant as an outline only. The Contractor shall be responsible for providing engineered drawings and specifications for review by the Owner prior to commencing work. Work shall meet all applicable codes and all requirements to achieve the Energy Star Rating. Subcontractor shall obtain all necessary permits and arrange required inspections. Equipment shall be in conformance with manufacturer's recommendations. Subcontractor shall attend pre-construction meeting with Contractor, and Owner prior to commencing work.
 - 2. Contractor shall be responsible for communication with the local jurisdictions and utility providers to verify their requirements and specifications.

1.05 SCOPE OF WORK

- A. The Contractor shall be responsible for the design and coordination of the electrical system.
- B. Submittals: Provide manufacturer's data and cuts for all light fixtures for final selection by Owner. Provide load calculations and power requirements.

- C. Quality Assurance: Electrical Contractor is responsible for verifying the system size, service size, proper over-current protection, load balance, and all other requirements to comply with the current National Electrical Code, International Residential Code, and all local requirements.
- D. System to include connection to and cost of power company interface and connection. Contractor shall verify requirements of the power company and shall include all necessary interface work as a part of his work.
- E. Coordinate all items that penetrate or mount on exterior walls with the General Contractor - mounting blocks shall be provided in the siding at all such locations.
- F. General Notes:
 - 1. The Electrical Contractor is responsible for all excavation; trenching, cutting, adjustments, patching and repair necessary to accomplish work. No structural members may be cut without the written permission of the Owner.
 - 2. All parts of the electrical system (except fixtures) must be completely concealed unless otherwise noted. No exposed conduit runs in occupied spaces will be accepted without prior approval.
 - 3. Verify the location of all panels with the Owner. Clearly mark all circuits as to size and use.
 - 4. All outlets within 5 feet of a sink must be GFI.
 - 5. Electrical Contractor to provide approved rated covers for all fixtures installed in rated ceilings and for fixtures installed in insulated ceilings.
 - 6. Where cover plate or fixture does not completely cover the hole in the wall do not install until Contractor has corrected the situation.
 - 7. All fixtures must be installed securely with the flanges flush with finished surfaces. Fixtures must not move when touched. Provide any blocking, backing, spacers, washers, anchors necessary to secure fixtures in place. Coordinate installation of devices penetrating exterior walls with the installation of mounting boxes, air barrier, and other mounting devices.
 - 8. Identify with a colored device all special circuits (computer circuits, exhaust fan switches, GFI, etc.)
 - 9. Seal around any potential attic bypasses (wiring penetrations) using caulk or foam.
 - 10. Air sealed device boxes (with sealing flange) shall be used at all locations in exterior walls.
- G. NOTE: Contractor shall contact the Electric company provider directly to verify requirements for electrical service connections to building meters. Contractor shall be responsible for all coordination and work required by Electric company provider to complete electric service to buildings.

1.06 REFERENCES

- A. NFPA 70 - National Electrical Code; National Fire Protection Association; 2005.
- B. ENERGY STAR; www.energystar.gov.

1.07 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

PART 2 PRODUCTS

2.01 MATERIALS

- A. 100 amp service to each unit minimum.
- B. Front door chimes.
- C. Photoelectric smoke and CO detectors shall be a single combined unit: Kiddie (FireX)
 - 1. KN-COPE-I; no substitutions. All smoke/CO detectors shall be 'hardwired' with battery back-up. All smoke/CO detectors shall be interconnected; when one sounds, all sound. Locate smoke/CO detectors on each level and as follows:
 - 2. In all bedrooms.
 - 3. Within 10 feet of all bedroom doors outside of bedrooms.

- D. Telephone outlets in living room and each bedroom. Use Category 5E cable to wire phone jacks to back panel to allow for high speed data connections to phone jacks.
- E. Exterior convenience outlets at back entry slab.
- F. Power distribution as necessary. Furnish and install feeders, panel boards, branch circuit wiring, wall switches, receptacles, outlet boxes, plates, conduits and wires for wiring installation. Install wiring for motors, exhaust fans, and pumps. Provide at least two 15 amp circuits for lighting and receptacles for first 500 sq. ft. and at least 1 for each additional 500 sq. ft. Provide at least two 20 amp circuit to serve kitchen, laundry and dining. Provide branch circuit for any fixed appliance over 1400 watts.
- G. Provide wiring and switches for following minimum light locations:
 - 1. Switched outlets in living room.
 - 2. Ceiling lights in all halls, stairs, tub areas, dining room, bedrooms, walk-in closets, mechanical area in basement, and 3 other basement locations determined by owner.
 - 3. Lights on walls above sinks in baths.
 - 4. Exterior wall lights at front and back entry stoop ceilings and garage front.
 - 5. Wall sconces where soffits do not permit ceiling lights.
 - 6. Wall sconces where lighting from ceilings over stairs would place fixture more than 8' above the floor level.
- H. Receptacles and switches to be white in color.
- I. Provide vapor seal junction boxes at all switches, outlets, and fixtures including boxes for telephone, cable and other utilities in exterior walls (Allied Moulded products or equal).
- J. Connections for appliances (kitchen and laundry) including 220 volt for range and clothes dryer.
- K. Switched outlet for garbage disposal.
- L. Receptacle for future fans for radon mitigation and porcelain medium base light socket with pull chain to be located in the attics. Coordinate locations with General Contractor and Plumbing Subcontractor.
- M. Wired cable TV system with jacks in living room (2), and all bedrooms. Verify locations with owner.
- N. Power to HVAC system.
- O. End mount outlet at kitchen peninsula partial ht. walls.
- P. Provide wiring and switching for exhaust fans. NOTE that one exhaust fan in each dwelling unit has two switches; one switch in the bathroom and one in a remote basement room near the furnace and water heater. The remote switch is wired parallel to the other and shall be labeled "Continuous Ventilation" and "Manual Control"

2.02 LIGHTING PACKAGE

- A. Provide and install light fixtures. Fixtures shall be selected from the table below and may be selected in combination from any of the listed options for each type.

Fixture	Location	Option 1	Option 2	Option 3	Option 4
FA	Ceiling - Bedroom	Nuvo 60-2631 White frosted glass/white painted metal three 13W GU24 15-1/4" diameter Energy Star	Nuvo 60-917 White white acrylic 15" diameter two 18W GU24 Energy Star	Seagull 75943BLE-15 frosted glass/white painted metal three 13W GU24 15" diameter Energy Star	Efficient Lighting EL-801-218-W frosted glass/white painted metal two 18W GU24 13" diameter Energy Star
FB-1	Ceiling - Hall, Laundry,	Nuvo 60-2628 White frosted	Nuvo 60-916 white acrylic	Seagull 75942BLE-15	Efficient Lighting EL-801-213-

Fixture	Location	Option 1	Option 2	Option 3	Option 4
	Tub area	glass/white painted metal two 13W GU24 11-1/2" diameter Energy Star	12" diameter one 18W GU24 Energy Star	frosted glass/white painted metal two 13W GU24 12" diameter Energy Star	Wfrostedglass/whitepainted metal two 13W GU24 13" diameter Energy Star
FB-2	Ceiling - Closets	Leviton 9860-LHG (direct-to-box mount) keyless lampholder with GU24 13W. Clear plastic protective cover. Energy Star	Craftmade K212PC-CF one 13W GU24 Clear Plastic Cover Energy Star		
FC-1	Wall - 24" Vanity	Nuvo 60-922 white acrylic 25"X5.5" two 17W T8 tubes Energy Star	Efficient lighting 205G-218 white acrylic/nickel 24"X5" two - 18W GU24 Energy Star		
FD	Ceiling - Dining Room (Hanging)	Nuvo 60-1909 white glass/brushed nickel 16" diameter One 18W GU24 Energy Star	Nuvo 76-283 White Metal RLM 16" diameter One GU24 Provide GU24 Adapter	Seagull 65625BLE-96 2 White glass/brushed nickel 15" dia one GU24 13 to 23 W Energy Star	
FE	Sconce - Stair	Nuvo 60-923 White (plastic lens) 18W GU24 Energy Star	Efficient Lighting EL-320-123 frosted glass/nickel 23w GU24 Energy Star		
FF-1	Ceiling - Unfinished Interior, Basement	Leviton 9860-LHG (direct - to-box mount) keyless lampholder with GU24 13W. Clear	Craftmade K212PC-CF one 13W GU24 Clear plastic cover Energy Star		

Fixture	Location	Option 1	Option 2	Option 3	Option 4
		protective cover. Energy Star			
FF-2	Ceiling - Unfinished Exterior (Garage)	Keyless 60 W			
FG	Exterior Sconce	Efficient Lighting EL-159-118- White 18w GU24 with photocell Energy Star	Seagull 8925PBLE-15 White 13w GU24 with photocell Energy Star	Progress Lighting P7339-30EB White polycarbonate two 13W GU24 photocell Energy Star	
FH-1	Ceiling - Kitchen	Simkar SMC317B11 RES 120V acrylic cloud 18" X 28" Three 17W T8 tubes Energy Star	Progress P7278-60EB Acrylic cloud 18" x 28" 4- F17 T8 tubes Energy Star		
FJ	Exterior - Ceiling	Progress Lighting P5744-30 White 60 W with photocell	Seagull 7567-15 White 60 W with photocell		
FL	Ceiling - Kitchen Peninsula (Pendant)	Nuvo 62-6253 Brushed Nickel Provide LED Lamp	Progress P500029-009 Brushed Nickel Provide LED Lamp	Sea Gull 6115201EN-9 62 Brushed Nickel LED Lamp Included	
FM	Ceiling - Kitchen Recessed Can	Sea Gull 14300S-15 White LED	Progress P86- TG Housing w/ P-8063-28 Trim White Provide LED Lamp		

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

END OF SECTION

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SECTION 31 0000 EARTHWORK

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Provide labor, materials and equipment for site clearing, excavation, filling, backfilling, grading, and site work as necessary to complete construction of the project. The scope also includes off-site utility and street improvements or repairs within the public right of way.
- B. Include the following items in the base bid:
 - 1. Work specified in the contract documents and described in geotechnical reports and letters, including required soil corrections.
 - 2. Importing and placement of engineered fill material below building pads and paved areas.
 - 3. Importing or exporting of material required to balance the site.
- C. Verify the location of existing utilities in affected areas and protect them accordingly during construction. Notify the Gopher State One-Call Agency before performing construction.
- D. Review and be familiar with the site and existing site conditions including the soil reports and letters.
- E. Work under this Section will include but not be limited to the following:
 - 1. Erosion control.
 - 2. Clearing of building site.
 - 3. Stripping and stockpiling of topsoil.
 - 4. Removal of objectionable materials, bedrock, fill soils and organic soils from under new
 - 5. Removal of underground appurtenances.
 - 6. Protection of underground utilities.
 - 7. Drainage and dewatering as necessary for work.
 - 8. Removal of surficial deposits and placement of engineered fill.
 - 9. Test rolling of subgrade, subcutting, and replacement of weak areas.
 - 10. Placing and compaction of base and backfill material under new building, slab and paving locations.
 - 11. Supplying and placing gas permeable fill under building slabs for radon mitigation.
 - 12. Backfilling and compacting around foundations.
 - 13. Rough grading.
 - 14. Placement of top soil and finish grading.
 - 15. Removal of excess materials.
 - 16. Coordination with landscaping contractor.
 - 17. Coordination with utility contractors.
 - 18. Seeding disturbed areas not scheduled for landscape work, interim seeding of early earthwork areas as applicable, and as needed for erosion control.
 - 19. Sod installation as needed for site restoration and erosion control.
 - 20. Quality control inspections and tests. (Contractor to schedule testing. Owner to pay for Geotechnical testing).
 - 21. Coordination with state for grading/utility permit in right-of-way.

1.02 REFERENCES

- A. ASTM C 136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2001.
- B. ASTM D 1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method; 2000.
- C. ASTM D 1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort; 2000.
- D. ASTM D 2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2000.
- E. ASTM D 2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods; 2001.

- F. ASTM D 3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods; 2001.
- G. ASTM D 4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2000.
- H. American Association of State Highway Transportation Officials (AASHTO) tests equivalent to ASTM tests referenced above may be used in place of ASTM tests.
- I. Minnesota Department of Transportation (Mn/DOT), Standard Specifications for Construction, 2005 edition.

1.03 SUBMITTALS

- A. See Section 01 3323 - Shop Drawings, Product Data and Samples for administrative requirements for submittal procedures.

1.04 TESTING AND INSPECTION SERVICE

- A. Geotechnical Consultant/Testing Agency is responsible for the following observations and analyses and to prepare tests and reports to document findings:
 - 1. Observation of subgrade preparation for footings, slabs-on-grade, and pavements (including pavers).
 - 2. Observation of the completed excavation for foundations, footings, slabs-on-grade, and pavements, coupled with a suitable amount of density testing to determine that the exposed soils are ready for backfilling or the proposed construction.
 - 3. Observation of proof rolling and recommendations for subgrade corrections.
 - 4. Analysis and approval of fill and backfill materials, whether from on-site or off-site sources.
 - 5. Observation and testing of filling and backfilling operations, including compaction work.
 - 6. Observation of footings and foundation installation.
 - 7. Analysis and approval of topsoil.
- B. Notify the Geotechnical Consultant/Testing Agency sufficiently in advance of operations to allow for their assignment of personnel and the scheduling of tests. Assist the Geotechnical Consultant/Testing Agency in performing inspections and soil testing for quality control.
- C. The Geotechnical Consultant/Testing Agency shall submit copies of reports to satisfy the minimum requirements as described in the Quality Control article near the end of this specification section. Submit copies to the Owner, City Engineer, and the General Contractor.
- D. The Geotechnical Consultant/Testing Agency shall promptly notify the Owner and Contractor of irregularities or deficiencies of work which are observed during performance of services. If in the opinion of the Owner, additional tests are required beyond those specified and their results indicate results not meeting that specified, the Contractor shall bear the expense of such additional tests ordered.
- E. The Geotechnical Consultant/Testing Agency's presence does not include supervision or direction of the actual work of the Contractor. Neither the presence of the Geotechnical Consultant/Testing Agency, nor any observations and testing performed by him shall excuse the Contractor from defects discovered in his work.
- F. Geotechnical Consultant/Testing Agency direction and instructions supersede direction provided in this specification.

1.05 UNFORESEEN CONDITIONS

- A. If unsatisfactory soil materials are encountered at design elevations and below those reasonably inferred from the contract documents, continue excavation as directed by the Owner, observed by the Geotechnical Consultant/Testing Agency, and approved by the Owner. If conditions are not a result of Contractor's negligence, additional excavation will be measured as directed by the Owner and paid for in accordance with contract conditions relative to changes in work. Deviation in quantities (credit or sold) of work shall be based on quantities of work observed by the Geotechnical Consultant/Testing Agency and be paid at unit prices (in place measurement) as described below.

1.06 UNIT PRICES

A. General:

1. Work to be included in the base bid is specified in Section 1.01, above. Should certain additional work be required due to unforeseen conditions, or should the quantities of certain classes of work be increased or decreased from those required by the Contract Documents by authorization of the Owner, the below unit prices shall, at the option of the Owner, be the basis for payment to the Contractor or credit to the Owner, for such increase or decrease in the work.
2. The unit prices shall represent the exact net amount per unit to be paid the Contractor (in case of additions or increases) or to be refunded the Owner (in case of subtractions or decreases). No additional adjustment will be allowed for mark-ups, overhead, profit, insurance, taxes, or other direct or indirect expenses of the Contractor or Subcontractors. No additional adjustments will be allowed for over excavation or other work without prior written approval of the Owner.
3. As soon as the work involved in each unit price item has been completed, submit documentation to establish the actual quantities provided. Submit to the Owner for review and issuance of a Change Order. Change Order amounts for each unit price item will be based on actual quantities multiplied by the unit price.
4. Incidental Work: Work incidental to unit prices includes, but is not limited to erosion control, storm water management, dewatering, shoring, stockpiling, equipment rental, pre-cleaning, post-cleaning, protections of existing features outside area of new construction or repair, restoration of areas impacted by construction operations, loading, off-site disposal of excess and demolition materials, tests and inspections, field measurements for unit price payment, and other items necessary to the proper execution of the unit price item to cover the finished work of the several kinds called for.
5. In-place volumes include the embankment volume of soil material removed from within the site in the case of cutting. In-place volumes include the compacted volume of soil material placed in its planned location within the site in the case of filling.
6. Application of unit prices is determined by the Geotechnical Consultant/Testing Agency with approval of the Owner. The Geotechnical Consultant/Testing Agency will establish the extent and volume of unit price items.

1.07 UNIT PRICES (ADD OR DEDUCT)

A. Unit Price No.1: Removal of Unsuitable Soil Materials.

1. Measurement Method: By the cubic yard, in place volume.
2. Includes: Excavating Unsuitable Soil Materials to required elevations, loading and removing from site, and dewatering if required.
3. Does Not Include Over-Excavation: Payment will not be made for over-excavated work nor for replacement materials.

B. Unit Price No. 2: General Fill (approved on-site material):

1. Method of Measurement: By the cubic yard, in place volume.
2. Includes: Obtaining material from local area of construction or other on-site source that meets the requirements for the specified backfill material, stockpiling, scarifying substrate surface, placing where required, compacting materials, and compaction testing.
3. Does Not Include Over-Excavation: Payment will not be made for over-excavated work nor for replacement materials.

C. Unit Price No. 3: General Fill (off-site material):

1. Method of Measurement: By the cubic yard, in place volume.
2. Includes: Supplying General Fill, stockpiling, scarifying substrate surface, placing where required, compacting materials, and compaction testing.
3. Does Not Include Over-Excavation: Payment will not be made for over-excavated work nor for replacement materials.

D. Unit Price No. 4: Removal of Existing Concrete Building Slab and Foundation:

1. Measurement Method: By the ton, concrete hauled off site (contractor to provide truck loading tickets).

2. Includes: Excavation of existing concrete slab and foundation, loading and removing from site, backfill of excavated area with onsite materials as required.
3. Does Not Include: Additional concrete removal from sidewalk onsite that is called out on the plans for removal.

1.08 DEFINITIONS

- A. Subgrade - The surface of soil or rock immediately below constructed features. The subgrade of floors and pavements is the surface of the soil or rock immediately below the floor or pavement section (i.e., pavement and base course).
- B. Soil Correction - The subcutting and replacement of Unsuitable Materials materials.
- C. Structural Fill - Fill placed below footings and forming a volume extending minimally 1 foot beyond the edge of footings and extending downward at a 1:1 slope to competent approved subgrade.
- D. Primary Support Fill - Fill placed beneath building slabs or pavements. For pavements this fill forms a volume extending minimally 1 foot beyond the edge of the pavement (or back of curb if applicable) and extending downward at a 1:1 slope to competent approved subgrade.
- E. Foundation Backfill - Backfill placed against foundation walls below the lowest floor elevation. It is placed in even increments on both sides of the foundation wall.
- F. Building Wall Backfill - Backfill placed against a building wall above the lowest floor elevation resulting in earth on one side of the wall, with building space on the other side.
- G. Utility Trench Backfill - Backfill placed in utility trenches.
- H. Lift - The maximum thickness of loose material that may be placed prior to compaction.
- I. Uncontrolled Fill - Fill, typically from past construction, for which undependable or no documentation exists regarding the type of materials or level of compaction. Therefore, this material is of undependable integrity and requires partial or complete removal where new construction is proposed which will impose some type of loading.
- J. Utility Trench Backfill - Backfill placed in utility trenches.
- K. Initial Backfill - Soil material placed over the Pipe Bedding and around the pipe to a level of 12 inches above the top of the pipe, and providing protection from pipe degradation due to corrosion.
- L. Topsoil - The upper layer of the soil profile which is supporting the growth of vegetation as evidenced by the existence therein of numerous roots and other organic matter.
- M. Rock - Sound and solid mass, layer or ledge of mineral matter in place of such hardness and texture that it evidences the following characteristics:
 1. Mechanical Definition of Rock: Cannot be effectively loosened or broken down by ripping in a single pass with a late model tractor-mounted hydraulic ripper equipped with one digging point of standard manufacturer's design adequately sized for use with and propelled by a crawler type tractor rated between 210- and 240-net flywheel horsepower, operating in low gear, or
 2. Manual Definition of Rock: In areas where the use of the ripper described above is impracticable, rock defined as sound material of such hardness and texture that it cannot be loosened or broken by a 6 pounds drifting pick. The drifting pick shall have a handle not less than 34 inches in length.
- N. Rough Grade - Constructed grade outside of the building envelope at the subgrade elevation of surface toppings such as pavements and topsoil.
- O. Finish Grade - Constructed grade outside of the building envelope for the finished surface of the site. Spot elevations and contours indicated in the drawings represent finish grade. This grade is the top of surface toppings such as pavements and topsoil. For sodded areas, this grade is the top surface of the 2 inch thick sod layer.
- P. Gas Permeable Aggregate - Fill underslabs containing voids and with no fines to allow underslab gases to travel to vent pipe.

1.09 ENVIRONMENTAL PROTECTIONS

- A. Control air pollution caused by dust and dirt and comply with governing regulations.
- B. If contaminated soils or hazardous materials are encountered during demolition or earthwork operations, comply with applicable regulations, laws, and ordinances concerning removal, handling and protection, against exposure or environmental pollution. If hazardous materials are discovered, stop work and notify Owner.

1.10 WARRANTY PERIOD AND MAINTENANCE BOND

- A. Guarantee workmanship furnished for a period of one year from the date of written acceptance of the work or project by the Owner. Provide a 1-year maintenance bond to the Owner.

PART 2 PRODUCTS

2.01 GENERAL - SOIL APPROVALS

- A. Existing site soil materials may be re-used if approved by the Geotechnical Consultant/Testing Agency. Soil materials obtained from off-site may be used if approved by the Geotechnical Consultant/Testing Agency before bringing the materials to the site.

2.02 UNSUITABLE MATERIAL

- A. Mixtures of soil containing organic and inorganic matter such as humus, spongy matter, roots, stumps, muck, peat, rubbish, debris, frozen matter, manmade materials, and other unstable or objectionable matter as designated by the Geotechnical Consultant/Testing Agency and Geotechnical Report.

2.03 SELECT SUITABLE MATERIAL

- A. Non-expansive mineral soil free of significant rock quantities, having a plasticity index of 15 or less, and a liquid limit of 40 or less, and free of materials that may prevent attaining specified density, or as modified by the Geotechnical Consultant/Testing Agency. Maximum size of stone or fragmentary rock for use as fill is 3 inches, as measured in their greatest dimension. Lean clay soils, and clean granular soils such as Select Granular Material meet the requirements for Select Suitable Material.

2.04 GAS PERMEABLE AGGREGATE - BASE UNDER ALL UNIT CONCRETE BUILDING SLABS WITH RADON MITIGATION, SEE SECTION 31 2113.

- A. Underslab gas permeable aggregate shall be crushed rock, crushed concrete or natural gravel. 100 percent of material shall pass a 2 inches screen. Less than 5 percent of material shall pass 1/4 inch screen. Suitable materials include:
 - 1. Mn/DOT "CA" coarse concrete aggregate.
 - 2. Washed 2 inches natural gravel.
 - 3. Pea rock.

2.05 SELECT GRANULAR MATERIAL

- A. Clean granular soil material meeting the following gradation requirements, or as modified by the Geotechnical Consultant/Testing Agency.
 - 1. 100 percent passing the 3 inches sieve
 - 2. Meet the requirements for Mn/DOT standard specification 3149.2B2.
 - 3. Less than 40 percent passing the No. 40 sieve
 - 4. No more than 12 percent passing the No. 200 sieve
 - 5. Soils meeting ASTM D 2487 categories SP, SW, GP, or GW may qualify.

2.06 SAND CUSHION - BASE UNDER CONCRETE BUILDING SLABS WITHOUT RADON MITIGATION

- A. Clean medium to coarse sand meeting the following gradation requirements, or as modified by the Geotechnical Consultant/Testing Agency.
 - 1. 85-100 percent passing the 3/8 inch sieve
 - 2. 10-50 percent passing the No. 4 sieve
 - 3. 0-25 percent passing the No. 8 sieve
 - 4. No more than 3 percent passing the No. 200 sieve

2.07 STRUCTURAL GRAVEL (FOR PAVEMENT, FOUNDATION, AND CONCRETE SLAB AREAS)

- A. Granular soil meeting the following gradation requirements, or as modified by the Geotechnical Consultant/Testing Agency.
 - 1. 100 percent passing the 3" sieve
 - 2. 50-90 percent passing the No. 4 sieve
 - 3. 20-60 percent passing the No 40 sieve
 - 4. 10-50 percent passing the No. 100 sieve
 - 5. No more than 5 percent passing the No. 200 sieve

2.08 TOPSOIL

- A. Fertile, agricultural soil capable of sustaining vigorous plant growth from well-drained site that is free of flooding; free from admixture of subsoil, slag and clay, stones, lumps, plants and their roots, sticks, toxic substances, acid or alkaline elements, and other deleterious substances.
- B. Contain approximately equal proportions of sand and clay by weight.
- C. Organic Content: 2 - 20 percent
- D. pH: 5.5 - 7.5.
- E. Existing on-site topsoil may be used if conforming to foregoing specified requirements.

2.09 PLANTING SOIL

- A. Use this soil for perennial beds, ground covers, and as indicated in the landscape (L) drawings.
- B. 10 percent clay loam
- C. 70 percent select granular material
- D. 10 percent organic leaf compost with 2 pounds
- E. 10-0-10 fertilizer per cubic yard
- F. 1 pound of isolite porous ceramic soil additive per square foot thoroughly mixed into the top 6 inches of soil by rototilling.

2.10 GEOTEXTILE (FOR SEPARATING SOIL MATERIALS)

- A. 3733 Type V or as designated by the Geotechnical Consultant/Testing Agency.

2.11 EROSION CONTROL BLANKET

- A. 3885 Category 2 and 3 or as designated by the Geotechnical Consultant/Testing Agency.

2.12 SOD

- A. Refer to requirements of Section 32 9200 - Turf and Grasses.

2.13 SEED

- A. Refer to requirements of Section 32 9200 - Turf and Grasses.

PART 3 EXECUTION

3.01 GENERAL

- A. Perform earthwork and soil correction in accordance with these specifications and as directed by the soils reports and Geotechnical Consultant/Testing Agency. Soils reports and Geotechnical Consultant/Testing Agency direction supersede these specifications. Notify Owner of discrepancies in a timely manner.
- B. If contaminated soil is encountered during excavation and construction of underground utilities, stop work and notify the Owner. Refer to Section 00 3131 - Geotechnical Data and Environmental Information.
- C. Do not export desirable soils and replace with less desirable soils in areas on-site without the written approval of the Owner.

3.02 PROTECTIONS & PRECAUTIONS

- A. Provide temporary fences, barricades, coverings, or other protections to preserve existing items to remain and to prevent injury or damage to person or property. Apply protections to adjacent

properties as required.

- B. **Adjacent Features:** Conduct trenching and excavation to minimize interference with adjacent structures, pavements and landscaped areas. Provide necessary bracing, sheeting, shoring or similar techniques to protect adjacent structures such as homes from damage due to earthwork operations. Assume responsibility for protecting adjacent features and restore damage to original or better conditions at no cost to the Owner.
- C. **Utilities:** Drawings indicate approximate locations of existing utilities. All utilities may not be indicated. Cooperate with Owner and utility companies for maintaining services. Verify the location of existing utilities in the area affected by construction and protect accordingly. Be cognizant of the depth of cover over utilities and take care to protect them from superimposed loads, frost, and freezing. Do not disrupt utility connections without providing temporary services. Exercise extreme care in excavating to prevent damage to existing utilities. Perform excavation near existing utilities by hand. Repair damages to existing utilities as directed by utility company. Pay costs for repairing utilities damaged due to earthwork operations at no cost to the Owner.
- D. **Water:** Prevent water from ponding in excavations by carefully scheduling excavation and fill procedures, maintaining grading, and providing diversion ditches, sumps, pumps, dewatering systems, and the like to convey water to an approved discharge point. Remove water prior to filling. Smooth-roll exposed earthen areas before the end of the workday to seal and protect these areas. Grade around buildings so that ground is pitched to prevent water from running into excavated areas and damaging structures. Prevent water from entering pits and trenches where footings are to be placed. Provide dewatering equipment to keep excavated areas clear of groundwater or surface runoff during construction so as to not adversely affect construction procedures or cause excessive disturbance of underlying natural ground or footing and slab subgrade. Where in the opinion of the Geotechnical Consultant/Testing Agency, a dry firm subgrade is not being maintained, employ other methods acceptable to the Geotechnical Consultant/Testing Agency.
- E. **Freezing:** Do not allow freezing of subgrade or fill soils, and, do not use frozen fill soils.
- F. **Sensitive Soils:** Subgrade soils may be sensitive to disturbance and potential loss of strength under construction traffic and/or excessive moisture or freeze/thaw conditions. Therefore, work with appropriate equipment such as tracked excavators and non-vibratory compaction equipment, with a minimum of abrupt movements in order to avoid soil disturbance. Do not allow water to pond on sensitive soils. Reference soils reports and consult the Geotechnical Consultant/Testing Agency for direction regarding sensitive soil conditions.
- G. **New Work:** Protect newly graded areas from traffic and erosion. Repair settlement and washing that occurs prior to acceptance of work. Re-establish grades to required elevations and slopes as required for Landscape Contractor.
- H. **Monuments:** Do not disturb monuments or stakes found on-site or off-site.
- I. **Security Devices:** Provide and maintain temporary barriers and security devices.
- J. **Traffic Control and Protections:**
 - 1. Conduct operations with minimum interference to public or private thoroughfares. Maintain continual protected egress and access.
 - 2. Prior to performing work, coordinate with city or other applicable street/right-of-way jurisdiction, to erect barricades to protect the traveling public, both vehicular and pedestrian in accordance with Mn/DOT Specification Section 1710 or as required by applicable officials. Do not disrupt, block, or close public street or walks without proper approvals.
 - 3. Develop, provide, maintain, and remove traffic controls.
 - 4. The Owner will not approve plans for technical competence.
 - 5. A "Contract Traffic Control Plan" is not part of this specification.

3.03 PREPARATION

- A. **Permits and Notifications:** Obtain and conform to required permits prior to initiating excavation work. Notify state, city and watershed district prior to commencement of earthwork operations.

Provide notifications in advance of the required minimum lead times.

- B. Photographs: Prior to commencement of earthwork operations, inspect areas in which work will be performed. Photograph existing conditions of surrounding properties which could be misconstrued as damaged resulting from earthwork or demolition work.
- C. Erosion and Sediment Control: Provide erosion and sediment control prior to initiating earthwork operations as indicated on the drawings. Obtain city approval for on-site erosion control.
- D. Layout and Elevations: Lay out site earthwork and establish site earthwork elevations based on control points and bench marks used in the drawings.
- E. Unused Utilities: Remove, plug or cap, as required, inactive and abandoned utilities encountered in earthwork operations and according to city requirements.
- F. Discrepancies: Notify Owner of discrepancies in a timely manner.

3.04 CLEARING AND GRUBBING

- A. Acceptance: Accept the site as found and remove trash, rubbish and other debris.
- B. Tree Preservation: Prior to initiating excavation operations, notify Owner to identify trees to be preserved. Provide orange mesh fence around the tree driplines as required by the Architect or City.
- C. Tree and Vegetation Removal: Remove trees, saplings, shrubs, bushes, vines and undergrowth as required for execution of construction except for plantings to remain as indicated in the drawings.
- D. Stump Removal: Remove stumps and roots systems within the limits of new construction to the following depths below the bottom of the respective proposed features:
 - 1. Walks 12 inches
 - 2. Drives 18 inches
 - 3. Building Areas 18 inches
 - 4. Parking Areas 12 inches
 - 5. Lawn Areas 8 inches
 - 6. Fill Areas 12 inches
 - 7. Where drives, walks and other construction or fills overlap, the greater depth applies.
- E. Burning: Burning of materials on-site is prohibited.
- F. Existing Structures: Remove existing foundations, structures, slabs and other manmade materials.

3.05 STRIPPING

- A. Remove topsoil and/or surface vegetation to its entire depth from construction areas. Remove topsoil in other areas in accordance with instructions of the soils reports and Geotechnical Consultant/Testing Agency direction.
- B. Pile topsoil in an area designated on the plans or as approved by the Owner where it will not interfere with building or utility operations.
- C. Stockpile a sufficient quantity for respreading on turf and planting areas.

3.06 COMPACTION STANDARD

- A. ASTM D1577 for densities established by the Modified Proctor Method.

3.07 EXCAVATION & SUBGRADE PREPARATION

- A. General:
 - 1. Excavate to the elevations and dimensions indicated in the drawings or as directed by the soils report. Remove Unsuitable Material encountered in the excavation where loading will be superimposed or where fill will be placed as directed by the Geotechnical Consultant/Testing Agency. Replace soils as specified in the Filling article below or as directed by the Geotechnical Consultant/Testing Agency.

2. Compact subgrade by rolling with vibratory or non-vibratory means using tamping roller, pneumatic tired rollers, three-wheel power rollers, sheep's foot roller, or other approved equipment suited to the soil being compacted. Obtain approval from the Geotechnical Consultant/Testing Agency for the type of equipment used in the work.
 3. Moisture condition the subgrade as necessary to achieve proper compaction. Moisture condition by discing or scarifying soil then aerating soil if too wet, or, sprinkle with water if too dry. Provide water source and sufficient hoses or water distributing equipment at the site for this purpose.
 4. Schedule Geotechnical Consultant/Testing Agency to approve subgrades prior to mobilizing equipment and materials for concrete work. Schedule during heavy equipment operations so that the Geotechnical Consultant/Testing Agency can observe the reaction of soils under heavy equipment loading as described in the Proof Rolling article herein.
 5. Notify Owner within 24 hours of subsurface conditions not anticipated in the Contract Documents and prior to performing extra excavation not described in the drawings or soils reports.
- B. Footings:
1. Excavate so that footings bear on undisturbed earth or Structural Fill. For Structural Fill, if required, excavate laterally down and away from footing edges to competent approved subgrade as described in the Definitions article for Structural Fill. Prepare subgrade of undisturbed earth or bottom of Structural Fill to the required width.
 2. Extend excavation a sufficient distance to permit placing and removal of other work and for inspection.
 3. Perform final excavation by hand.
 4. Do not allow bearing capacity of subgrade under footings and foundations to be less than the net allowable bearing capacity used in the design.
 5. Subgrade Compaction and Moisture Content: 95 percent compaction, moisture content within 3 percent of optimum.
- C. Building Slabs:
1. Excavate under slabs to a minimum of 10 feet below finished floor elevation. Provide Primary Support Fill as necessary to establish slab section subgrade to 10 inches below finished floor elevation.
 2. Subcut clayey silt soils within 4 feet of finished grade under exterior entrance slabs, patios, or garage aprons, and under interior garage slabs.
 3. Subgrade Compaction and Moisture Content: 97 percent compaction, moisture content within 3 percent of optimum.

3.08 PROOF ROLLING (TEST ROLLING)

- A. Proof roll subgrades which are required to meet specific compacted densities prior to placing overlying fill soils or structures.
- B. Proof roll with a loaded tandem axle truck or other acceptable equipment. Slowly roll equipment back and forth over entire subgrade. Make successive passes not greater than one-half the axle width from previous pass to insure thorough coverage of subgrade.
- C. Proof-roll each area of building and pavement in its entirety. If this is not possible, proof-roll areas large enough to allow for an efficient operation as directed by the Geotechnical Consultant/Testing Agency.
- D. Schedule Geotechnical Consultant/Testing Agency to observe proof rolling operations for excessive deflection of soft, weak and unstable areas. Where subgrade evidences excessive deflection, or, has been softened or eroded by flooding, unfavorable weather, or site construction operations, remove incompetent soils, replace, and recompact as directed by the Geotechnical Consultant/Testing Agency.

3.09 GEOTEXTILE

- A. The Geotechnical Consultant/Testing Agency will determine locations where geotextile may be used as an alternative to removal of Unsuitable Soils in some areas.

- B. Where geotextile is used, follow manufacturer's instructions for placement and as directed by the Geotechnical Consultant/Testing Agency.

3.10 FILLING

A. General:

1. Fill to the elevations and dimensions indicated in the drawings or as directed by the soils report. Fill excavations resulting from the removal of Unsuitable Materials as directed by the Geotechnical Consultant/Testing Agency.
2. Compact fill in lifts by rolling with vibratory or non-vibratory means using tamping roller, pneumatic tired rollers, three-wheel power rollers, sheep's foot roller, or other approved equipment suited to the soil being compacted. Obtain approval from the Geotechnical Consultant/Testing Agency for the type of equipment used in the work.
3. Moisture condition fill soils as necessary to achieve proper compaction. Moisture condition by discing or scarifying soil then aerating soil if too wet, or, sprinkle with water if too dry. Provide water source and sufficient hoses or water distributing equipment at the site for this purpose.
4. Where fill is to be placed on side slopes, bench the base and scarify after topsoil stripping.
5. Do not allow bearing capacity of subgrade under footings and foundations to be less than the net allowable bearing capacity used in the design.
6. Do not place, spread, or roll frozen fill. Do not place fill on frozen ground where frost has penetrated greater than 1 inch.
7. Do not place fill in standing water or over softened soils.
8. Do not place fill during unfavorable weather. When work is interrupted by unfavorable weather, do not resume fill operations until the density and moisture content of previously placed fill is as specified.
9. Smooth-roll fill areas before the end of the workday to seal and protect these areas.
10. Limit compaction with non self-propelled compaction equipment to maximum lifts of 6 inches.
11. Do not begin backfilling of walls (including retaining walls) until forms are removed, walls have been braced, the excavation is cleaned of trash and debris, and below grade work of other Sections has been completed. Do not place backfill against walls (including retaining walls) prior to 4 days after completion of cast-in-place concrete.
12. Prior to backfilling Building Walls notify Owner and have waterproofing manufacturer inspect the waterproofing. Complete and/or repair areas not adequately waterproofed according to manufacturer's direction. Have waterproofing manufacturer reinspect at no additional cost to the Owner. Do not backfill Building Walls until waterproofing is approved by the manufacturer.
13. Place backfill around structures as the work of construction progresses. Exercise extreme care near walls. Provide adequate bracing or other protection as necessary. Do not operate heavy equipment close to walls without adequate support for walls. For Foundation Walls, bring backfill to the elevations indicated in the drawings in even increments on each side of the wall.
14. Where grade differs on opposite sides of a wall, compact backfill material along face of wall in layers and not more than 8 inches in compacted thickness with power-driven hand tampers. Compact each layer to minimum percentages as specified herein.
15. Have Geotechnical Consultant/Testing Agency approve material types, fill placement, and finished subgrade for foundations, slabs, and pavements. Additionally, schedule during heavy equipment operations so that the Geotechnical Consultant/Testing Agency can observe the reaction of soils under heavy equipment loading as described in the Proof Rolling article herein.
16. If soils inspections, analysis, or testing indicate that the materials specified have not been furnished, placed, and compacted in compliance with these specifications or as directed by the Geotechnical Consultant/Testing Agency, remove the material, replace, and recompact until approval from the Geotechnical Consultant/Testing Agency is obtained.

B. Fill Types:

1. All compaction is measured by the Modified Proctor Density method, ASTM D1557.

2. 1. General Fill:
 - a. Allowable Materials: All soil materials listed in Part 2, except Unsuitable Material.
 - b. Maximum Lift: 8 inches
 - c. Compaction: 90 percent
 - d. Moisture Content: Within 3 percent of optimum.
3. Structural Fill:
 - a. Allowable Materials: Select Granular Material, Structural Gravel.
 - b. Maximum Lift: 6 inches
 - c. Compaction: 97 percent
 - d. Moisture Content: Within 3 percent of optimum.
4. Primary Support Fill:
 - a. Allowable Materials: Select Granular Material, Structural Gravel, Sand Cushion.
 - b. Maximum Lift: 6 inches
 - c. Compaction: 97 percent
 - d. Moisture Content: Within 3 percent of optimum.
5. Building Wall Backfill:
 - a. Allowable Materials: Select Granular Material, Structural Gravel.
 - b. Maximum Lift: 6 inches
 - c. Compaction: 95 percent
 - d. Moisture Content: Within 3 percent of optimum.
6. Foundation Backfill
 - a. Allowable Materials: Select Granular Material, Select Suitable Material.
 - b. Maximum Lift: 8 inches
 - c. Compaction: 93 percent
 - d. Moisture Content: Within 3 percent of optimum.
7. Clay Liner
 - a. Allowable Materials: Clay Liner
 - b. Maximum Lift: 8 inches
 - c. Compaction: 95 percent
 - d. Moisture Content: Within 35 percent of optimum
8. Sand Cushion (base for concrete slabs where there is no radon mitigation).
 - a. Allowable Materials: Sand Cushion (base under concrete slabs)
 - b. Maximum Lift: Not applicable.
 - c. Compaction: Smooth and level existing subgrade. Compact as required until there is no loss of soil elevation prior to placing Sand Cushion. Place Sand Cushion 4-6 inches thick. Thoroughly compact until no loss of elevation occurs.
 - d. Moisture Content: Not applicable.
 - e. Other: Place vapor barrier as required by Section 07 2500 - Vapor Retarders and Air Barrier.
9. Gas permeable Aggregate (base for concrete floor slabs of dwelling units slabs as indicated on drawings for radon mitigation).
 - a. Radon vent pipe to be installed connecting all under slab areas.
 - b. Thickness of gas permeable aggregate 4" minimum.
 - c. Moisture Content: Not applicable.
 - d. Place vapor barriers as per Section 07 2620 - Vapor Retarders and Air Barrier.

3.11 BOND BREAK AT ADFREEZE ZONES FOR ISOLATED FOOTINGS

- A. Prevent isolated footings and foundations from frost movement by providing a bond break between the foundation and the soil (adfreeze zone). The bond break may be obtained by wrapping the footing or foundation with polyethylene wrap and backfilling with Select Granular Material within 3 inches of the foundation, or as directed by the Geotechnical Consultant/Testing Agency.

3.12 PIPE TRENCHING & BACKFILLING

- A. Reference Section 33 0000 - Utilities.

3.13 SUBDRAINAGE

- A. Reference Section 33 4600 - Subdrainage.

3.14 ROUGH GRADING

- A. Plan grades indicate Finish Grades. Rough Grade to transform the site to the subgrade elevations of surface toppings such as pavements (including base), topsoil, and sod. Complete Rough Grading by blading to grade uniformly without awkward or abrupt grade transitions.
- B. Slope grade to drain away from the building.
- C. Remove large stones, boulders and debris from the site.
- D. Tolerances:
 - 1. Top Surface of Subgrade: Plus or minus ½ inch.
 - 2. Top Surface of Backfilling: Plus or minus ½ inch.

3.15 PLACEMENT OF TOPSOIL

- A. Coordination:
 - 1. Landscape Contractor: Coordinate the timing and placing of Topsoil with the Landscape Contractor. Prior to spreading Topsoil, scarify subgrade to a depth of 4 inches to encourage intermingling of the Topsoil layer in landscaped areas. Scarify other areas as required by the Landscape Contractor.
 - 2. Irrigation System & Sodding: Coordinate the timing of placing the Topsoil with the installation of the irrigation system and sod. If Topsoil is disturbed or moved prior to placement of sod, add Topsoil and regrade to restore the finish elevation (minus sod thickness for areas to be sodded).
 - 3. Utilities: Coordinate with utility contractors to ensure that exterior underground utility work is completed before Topsoil placement is started.
- B. Place Topsoil to the thicknesses indicated in the drawings at areas previously stripped. Do not place Topsoil in building or paved areas. Install so that the surface of the Topsoil is 2 inches below Finish Grade for areas to be sodded.
- C. Sodding and Seeding:
 - 1. Refer to requirements of Section 32 9200 - Turf and Grasses.
 - 2. Seed and disc mulch Topsoil in disturbed areas not scheduled for landscaping by Landscape Contractor.

3.16 FINISH GRADING

- A. Plan grades indicate Finish Grades. Finish Grade to transform the site to the elevations indicated in the drawings without awkward or abrupt grade transitions. Grade so that water will drain readily away from the building and off-site by means of contours, ditches, swales and drainage facilities as indicated in the drawings.
- B. Coordinate with utility contractors to ensure that exterior underground utility work is completed before Finish Grading is started.
- C. Bring areas to be sodded to within 2 inches of final grade using topsoil.
- D. Tolerances: Plus or minus ½ inch.

3.17 EROSION CONTROL BLANKET

- A. Provide Erosion Control Blanket at the locations indicated in the drawings or for slopes exceeding 4:1 (horizontal:vertical).
- B. Where Erosion Control Blanket is used, follow manufacturer's instructions for placement and as directed by the Geotechnical Consultant/Testing Agency.

3.18 EARTHWORK BALANCE & DISPOSAL

- A. Earthwork Balance: The earthwork for the site is not intended to balance. Review soils reports for anticipated on-site soils and determine import and export quantities. Supply and import the necessary materials to the site.

- B. Soil Exchange Areas: Utilize soil exchange area, if identified on the drawings, for the purpose of exchanging suitable soils with unsuitable soils in order to limit import and export quantities.
- C. Disposal: Remove excess materials and Unsuitable Materials from the site and dispose of legally.

3.19 CLEANUP & RESTORATION

- A. Cleanup: Thoroughly police and rake the site and adjacent areas as required to provide neat clean surfaces.
- B. Restoration:
 - 1. Restore on-site and off-site areas disturbed by construction operations to original or better conditions. Restore turf areas by seed or sod, as directed by the Owner of the disturbed surface. Provide sod for disturbed areas between existing homes and the city street.
 - 2. Provide 3 foot wide strip of sod behind off-site curbs. Refer to requirements of Section 32 9200 - Turf and Grasses for additional information.
 - 3. Provide seed at turf areas that are not sodded. At seed areas, provide Erosion Control Blanket for slopes exceeding 4:1 (horizontal:vertical).
- C. Conduct earthwork operations in a manner that prevents spillage on streets and adjacent areas. Clean up spillage, on-site and off-site caused by earthwork operations.
- D. Remove construction sediment from rain gardens and conduct other tasks as necessary to reestablish rain gardens to requirements as indicated in the drawings and specifications.
- E. Verify that both rain garden and site grades have been built to elevations specified on grading plan prior to final restoration. If required by City for Certificate of Occupancy or other documentation, have rain garden grades surveyed to establish/verify elevations, benches, and volumes prior to final restoration. If grades are not as specified, notify Owner immediately and correct grades accordingly.

3.20 QUALITY CONTROL

- A. General: Arrange for and assist the Geotechnical Consultant/Testing Agency as necessary to conduct required inspections and tests. Notify the Geotechnical Consultant/Testing Agency when fill, backfill, excavation and compaction processes commence for observation and testing. Do not proceed with further work until appropriate testing has been satisfactorily completed. Allow Geotechnical Consultant/Testing Agency to inspect and approve subgrades and fill layers before further work is performed.
- B. The following minimum representative tests, inspections, and related work are required.
 - 1. Mechanical analysis and classification (ASTM C 136 and D 2487): Provide one representative test of each type of fill from each source, on-site and off-site, including base materials used below floors and pavements.
 - 2. Standard Proctor analysis (ASTM D 698): Provide one representative test of each material from each source, on-site and off-site, and for subgrade soils.
 - 3. Compaction (density) test (ASTM D 1556 and D2922):
 - a. Building Floors:
 - 1) 1 test per lift of fill per 1000 sq foot area
 - 2) 1 test for final floor section subgrade per 1000 sq foot area
 - 3) 2 tests for each isolated fill area
 - 4) 1 test daily during filling
 - 5) Perform tests immediately prior to constructing floor section.
 - b. Wall Footings:
 - 1) 1 test per lift of fill per 50 lineal feet of fill placed below footings
 - 2) 1 test per 50 lineal feet of final footing subgrade
 - 3) 1 test per 2 vertical feet per 50 lineal feet of backfill placed against footings
 - 4) 1 test daily during filling
 - 5) Perform tests immediately prior to pouring footings.
 - c. Column Footings:
 - 1) 1 test per lift of fill placed below column footings per column footing

- 2) 1 test of final column footing subgrade per column footing
- 3) 1 test dialing during filling
- 4) Perform tests immediately prior to pouring footings.
- d. Pipe Trenches:
 - 1) 1 test per lift of fill per 500 lineal feet of pipe
 - 2) 1 test per lift of backfill per 500 lineal feet of pipe
 - 3) 1 test daily during backfilling
- e. Pavements:
 - 1) Non-streets (unit driveways):
 - (a) 1 test per lift of fill per 1000 sq foot area
 - (b) 1 test for final pavement section subgrade per 1000 sq foot area
 - (c) 1 test per lift of aggregate base or granular base per 1000 sq foot area
 - 2) Streets (parking lots and development access roads):
 - (a) 1 test per lift of fill per 500 lineal feet
 - (b) 1 test for final pavement section subgrade per 500 lineal feet
 - (c) 1 test per lift of aggregate base per 500 lineal feet
 - 3) 1 test daily during filling or base construction
- f. If nuclear methods are used, limit to 90 percent of the total test number, with location mixed such that correlation with sand cone method can be easily made.
- 4. Proof Rolling: In the presence of the Geotechnical Consultant/Testing Agency, proofroll the compacted subgrades in building and pavement areas as specified herein.
- 5. Topsoil:
 - a. Mechanical analysis and classification (ASTM C 136 and D 2487): Provide 2 representative tests from each source, on-site and off-site.
 - b. Organic content: Provide 2 representative tests from each source, on-site and off-site.
 - c. pH: Provide two representative tests form each source, on-site and off-site.
- 6. Infiltration Tests: Owner or regulators (e.g., city) may test the infiltration rate of subgrade and soils of rain garden areas or infiltration basins bottoms using infiltrometers or similar equipment to verify that a minimum rate of 2 inches/hour is maintained. Remove and replace soils failing to meet this requirement at no additional cost to the Owner.
- C. Coordinate inspections and testing with regulators (e.g., City).
- D. Re-Testing: If, based upon Geotechnical Consultant/Testing Agency reports and inspections, work does not meet specified requirements, remove work, replace and retest at no additional cost to the Owner.

END OF SECTION

SECTION 31 1000 SITE CLEARING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Clearing and grubbing.
- B. Selective removal and trimming.
- C. Earth stripping and stockpiling.
- D. Debris removal.

1.02 REFERENCE STANDARDS

- A. 29 CFR 1910.266 - Logging Operations; Current Edition.
- B. ANSI A300 Part 1 - American National Standard for Tree Care Operations - Tree, Shrub, and Other Woody Plant Management - Standard Practices (Pruning); 2017.
- C. ANSI Z133 - American National Standard for Arboricultural Operations - Safety Requirements; 2017.

1.03 QUALITY ASSURANCE

- A. Clearing Firm Qualifications: Company specializing in performing work of type specified and with at least five years of documented experience.
- B. Trimming or Pruning Qualifications: Tree Care Industry Association (TCIA) Certified Treecare Safety Professional.

1.04 FIELD CONDITIONS

- A. Ambient Conditions: Terminate work during hazardous environmental conditions according to 29 CFR 1910.266.
- B. Temporary Erosion and Sediment Control: Comply with other requirements specified in Section 01 5713 - Temporary Erosion and Sediment Control.

PART 3 EXECUTION

2.01 EXAMINATION

- A. Comply with additional requirements specified in Section 01 7000 - Execution and Closeout Requirements.
- B. Construction Fencing: See Section 01 5000 - Temporary Facilities and Controls.
- C. Identify preexisting debris, junk, and trash on-site.

2.02 PREPARATION

- A. Coordinate work with utility companies; notify before starting work and comply with local requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Protect existing structures and other elements that are to remain.
- E. Remove preexisting debris, junk, and trash on-site.

2.03 CLEARING AND GRUBBING

- A. Clearing: Cut trees, stumps, shrubs, downed timber, and other vegetation for removal within identified area as indicated on drawings according to 29 CFR 1910.266. Follow recommendations of ANSI Z133 and best local practices for species involved.
- B. Do not remove or damage vegetation beyond limits indicated on drawings.

2.04 SELECTIVE REMOVAL AND TRIMMING

- A. Selective Removal: Individual tree and shrub identified for removal as indicated on drawings according to 29 CFR 1910.266.

- B. Selective Trimming: Individual limbs and branches cut back according to ANSI A300 Part 1 identified for removal as indicated on drawings. Follow recommendations of ANSI Z133 and best local practices for species involved.

2.05 EARTH STRIPPING AND STOCKPILING

- A. Stripping:
 - 1. Remove topsoil within identified area as indicated on drawings.
- B. Stockpiling:
 - 1. Place topsoil in identified areas as indicated on drawings:
 - a. Pile depth not to exceed 8 feet.

2.06 REMOVED VEGETATION PROCESSING

- A. Do not burn, bury, landfill, or leave on-site, except as indicated on drawings.
- B. Trees: Sell if marketable.

2.07 CLEANING

- A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.
- B. Remove unused stockpiled subsoil. Grade stockpile area to prevent standing water.
- C. Leave site clean and ready to receive work.

END OF SECTION

SECTION 31 2113 RADON MITIGATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Coordinate sleeving of foundations to connect all slab areas under living spaces to radon vent(s).
- B. Coordinate installation of underslab gas-permeable aggregate.
- C. Coordinate installation of underslab perforated collection pipe and laterals.
- D. Coordinate installation of underslab gas-retarder membrane, including sealing at seams, edges and penetrations.
- E. Coordinate installation of vertical vent pipe from slab/vapor retarder penetration and up through roof.
- F. Coordinate installation of electrical junction boxes for vent fan(s), alarm and light.
- G. Label radon vent pipe.
- H. Final pressure testing.
- I. Final radon testing.

1.02 RELATED SECTIONS

- A. Section 01 4000 - Quality Control.
- B. Section 03 3000 - Cast-In-Place Concrete: underslab vapor retarder.
- C. Division 22 - Plumbing: riser pipe.
- D. Division 26 - Electrical.
- E. Section 31 0000 - Earthwork (underslab gas-permeable aggregate).
- F. Section 33 4100 - Subdrainage (underslab perforated collection pipe).

1.03 REFERENCES

- A. Minnesota Housing Finance Agency (MHFA) Multifamily Construction Standards - Radon Mitigation.
- B. ANSI-AARST Standard: Protocol for Conducting Radon and Radon Decay Product Measurements in Multifamily Buildings, (ANS/AARST MAMF 2012).
- C. National Radon Proficiency Program: Certification radon tester qualifications.
- D. National Radon Safety Board: Certification radon tester qualifications.

1.04 DESIGN REQUIREMENTS

- A. All radon mitigation systems must be installed in accordance with ANSI/AARST "Radon Mitigation Standards for Multifamily Buildings", and Minnesota Housing Radon Policy.
 - 1. Power connections to junction boxes for future vent fans shall be provided by the electrical subcontractor.
 - 2. A central pressure failure alarm panel shall be provided by the radon subcontractor and installed by the electrical subcontractor in Files 143. The electrical subcontractor shall be responsible for connecting all of the riser pressure failure alarms to this one location.
 - 3. All dwelling units shall be tested when the project is complete and prior to occupancy, by a certified tester following the test procedures in the current ANSI-AARST Standard: Protocol for Conducting Radon and Radon Decay Product Measurements in Multifamily Buildings, (ANS/AARST MAMF). If testing indicates Radon levels 4 pCi/l or greater for any area the owner shall install vent fans at all risers powered by the roughed-in attic junction boxes. The fans shall be sized to mitigate the current radon levels and all dwelling units shall be tested to confirm the mitigated radon levels are below acceptable levels.
 - 4. Provide labeling of exposed risers.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Test Reports

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years of experience.
 - 1. Installer shall be licensed by the Minnesota Department of Health.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Underslab gas-permeable aggregate as specified in 31 0000 - Earthwork.
- B. Underslab perforated collection pipe to be 4 inch corrugated plastic tubing as specified in Section 33 4100 - Subdrainage.
- C. Vapor retarder membrane as specified in 03 3000 - Cast-In-Place Concrete.
- D. Vertical vent pipe to be 4" PVC waste and vent pipe specified in Division 22 - Plumbing.
- E. Power, wiring, conduit and other electrical components as specified in Division 26.
- F. Central pressure failure alarm panel shall have an audible and visual signal for each riser location and shall be capable of identifying the location of any failing riser. The panel shall include a reset switch controlled by the owner.

PART 3 EXECUTION

3.01 EXECUTION

- A. Coordinate underslab pipe locations with installation of footings and foundations and provide sleeves where necessary to connect all underfloor areas.
- B. Locate systems where indicated on drawings.
- C. A 6 inch thick layer of gas permeable aggregate shall be placed on subgrade of the entire floor area directly under the concrete floor slab.
- D. A 4 inch perforated under the slab collection pipe shall be installed within the gas permeable aggregate to connect all underslab areas within the building to the point of the vertical vent pipe (or pipes). Install tee connection where pipes join. Install the connection at point where vertical vent pipe connects through the concrete slab to the underslab collection pipe. Friction connections are acceptable below the vapor retarder membrane but all connections made above the vapor retarder membrane must be solvent welded air tight joints.
- E. The vapor retarder membrane shall be installed on the top of the gas permeable aggregate and directly under the concrete slab. All seams shall be taped. All edges shall be sealed to the foundation wall or other material that forms the edge. All penetrations (pipe, conduit, other) shall be sealed airtight to the membrane.
- F. Install the vertical vent pipe from the underslab collection pipe up through the roof. All joints shall be solvent welded airtight. Flash at roof as for typical plumbing vent stack. Do not interconnect to plumbing vents. In attic or roof area, mark pipe "radon vent" with permanent marker in a location above roof insulation and visible from attic access location.
- G. Coordinate installation of power supply junction box at the fan location in the attic.

END OF SECTION

**SECTION 32 1123
AGGREGATE BASE COURSES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aggregate base course.
- B. Paving aggregates.

1.02 REFERENCE STANDARDS

- A. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop; 2022, with Errata .
- B. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2019.
- C. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)); 2012 (Reapproved 2021).
- D. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method; 2015, with Editorial Revision (2016).
- E. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)); 2012 (Reapproved 2021).
- F. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2015.
- G. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2023.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Samples: 10 lb sample of each type of aggregate; submit in air-tight containers to testing laboratory.
- C. Materials Sources: Submit name of imported materials source.
- D. Aggregate Composition Test Reports: Results of laboratory tests on proposed and actual materials used.
- E. Compaction Density Test Reports.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Aggregate Base: Conforming to MnDOT 3138 Aggregate Base, Class 5.

2.02 SOURCE QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for general requirements for testing and analysis of aggregate materials.
- B. If tests indicate materials do not meet specified requirements, change material and retest.
- C. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the work are as indicated.
- B. Verify substrate has been inspected, gradients and elevations are correct, and is dry.

3.02 PREPARATION

- A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.
- B. Do not place aggregate on soft, muddy, or frozen surfaces.

3.03 INSTALLATION

- A. For aggregate surfacing: spread aggregate over prepared substrate to a total compacted thickness as indicated on the drawings. Compact to 97 percent o
- B. Under Bituminous Concrete Paving:
 - 1. Place coarse aggregate to a total compacted thickness as indicated on the drawings.
 - 2. Compact to 100 percent of maximum dry density.
- C. Under Portland Cement Concrete Paving:
 - 1. Place coarse aggregate to a total compacted thickness as indicated on the drawings.
 - 2. Compact to 100 percent of maximum dry density.
- D. Place aggregate in maximum 4 inch layers and roller compact to specified density.
- E. Level and contour surfaces to elevations and gradients indicated.
- F. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.
- G. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
- H. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.04 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
- B. Scheduled Compacted Thickness: Within 1/4 inch.
- C. Variation From Design Elevation: Within 1/2 inch.

3.05 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for general requirements for field inspection and testing.
- B. Compaction density testing will be performed on compacted aggregate base course in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.
- C. Compaction density testing will be performed on compacted aggregate base course in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.
 - 1. Results will be evaluated in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 ("standard Proctor").
 - 2. If tests indicate work does not meet specified requirements, remove work, replace and retest.
 - 3. Frequency of Tests: Provide the minimum number of tests as follows, one test minimum.
 - a. Exterior Paving and Similar Construction: One test for every 2,500 square feet per 1-foot of depth of material placed or fraction thereof.
- D. Proof roll compacted aggregate at surfaces that will be under slabs-on-grade, pavers, and paving. Contractor shall obtain approval of the geotechnical engineer regarding suitability of the compacted aggregate surfacing layer prior to placement of bituminous or concrete surfacing.

3.06 CLEANING

- A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

END OF SECTION

SECTION 32 1216 ASPHALT PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Double course bituminous concrete paving.

1.02 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures
- B. Provide bituminous mix design data.

1.03 QUALITY ASSURANCE

1.04 FIELD CONDITIONS

- A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.

PART 2 PRODUCTS

2.01 MATERIALS

2.02 ASPHALT PAVING MIXES AND MIX DESIGN

- A. Asphalt Base Course: Conforming to MnDOT Section 2360, mixture type Non-Wearing Course SPWEA340C.
- B. Asphalt Wearing Course: Conforming to MnDOT 2360, mixture type Wearing Course SPWEA240C.

2.03 SOURCE QUALITY CONTROL

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that compacted subgrade is dry and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.

3.02 PREPARATION - TACK COAT

- A. Apply tack coat in accordance with manufacturer's instructions and MnDOT 2357.
- B. Apply tack coat on asphalt or concrete surfaces over subgrade surface at uniform rate of 1/3 gal/sq yd.

3.03 PLACING ASPHALT PAVEMENT - DOUBLE COURSE

- A. Install Work in accordance with MnDOT 2360.
- B. Place asphalt base course to thickness indicated on the drawings.
- C. Place asphalt wearing course to thickness indicated on the drawings.
- D. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
- E. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.04 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
- B. Compacted Thickness: Within 1/4 inch of specified or indicated thickness.
- C. Variation from True Elevation: Within 1/2 inch.

3.05 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for quality control.

3.06 PROTECTION

- A. Immediately after placement, protect pavement from mechanical injury for 1 days or until surface temperature is less than 140 degrees F.

END OF SECTION

SECTION 32 1313 CONCRETE PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete sidewalks, integral curbs, gutters, median barriers, parking areas, and roads.

1.02 RELATED REQUIREMENTS

- A. Section 03 1000 - Concrete Forming and Accessories.
- B. Section 32 1120 - Subbase and Aggregate Base Courses.

1.03 REFERENCE STANDARDS

- A. ACI PRC-305 - Guide to Hot Weather Concreting; 2020.
- B. ACI PRC-306 - Guide to Cold Weather Concreting; 2016.
- C. ACI SPEC-301 - Specifications for Concrete Construction; 2020.
- D. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2023.
- E. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2024.
- F. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.
- G. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Asphalt Types); 2023.
- H. ASTM D1752 - Standard Specification for Preformed Sponge Rubber, Cork, and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction; 2018 (Reapproved 2023).

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on joint filler, admixtures, and curing compound.

1.05 QUALITY ASSURANCE

PART 2 PRODUCTS

2.01 MATERIALS

- A. Form Materials: As specified in Section 03 1000, comply with ACI SPEC-301.
- B. Joint Filler: Preformed; non-extruding bituminous type (ASTM D1751) or sponge rubber or cork (ASTM D1752).
 - 1. Product:

2.02 CONCRETE MATERIALS

- A. Concrete Materials: Conform to MnDOT 2461.

2.03 ACCESSORIES

- A. Curing Compound: MnDOT 3754 Poly-Alpha Methylstyrene (AMS) Membrane Curing Compound.

2.04 CONCRETE MIX DESIGN

2.05 MIXING

- A. Transit Mixers: Comply with ASTM C94/C94M.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify compacted subgrade is acceptable and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.

3.02 SUBBASE

- A. See Section 32 1120 for construction of base course for work of this Section.

3.03 PREPARATION

- A. Moisten base to minimize absorption of water from fresh concrete.
- B. Coat surfaces of manhole frames with oil to prevent bond with concrete pavement.

3.04 FORMING

- A. Place and secure forms to correct location, dimension, profile, and gradient.
- B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
- C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.05 PLACING CONCRETE

- A. Ensure reinforcement, inserts, embedded parts, formed joints are not disturbed during concrete placement.

3.06 JOINTS

- A. Joint concrete sidewalks in accordance with MnDOT 2521,C2.
- B. Place 3/8 inch wide expansion joints at 50 foot intervals and to separate paving from vertical surfaces and other components and in pattern indicated.
 - 1. Form joints with joint filler extending from bottom of pavement to within 1/2 inch of finished surface.
 - 2. Secure to resist movement by wet concrete.
- C. Saw cut contraction joints 1/8 inch wide at an optimum time after finishing. Cut 1/4 into depth of slab.

3.07 FINISHING

- A. Finish concrete sidewalks in accordance with MnDOT 2521,C1.
- B. Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

3.08 TOLERANCES

- A. Maximum Variation From True Position: 1/4 inch.

3.09 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.
 - 1. Provide free access to concrete operations at project site and cooperate with appointed firm.
- B. Compressive Strength Tests: ASTM C39/C39M; for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cu yd or less of each class of concrete placed.
 - 1. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

3.10 PROTECTION

- A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.

END OF SECTION

SECTION 32 9223 SODDING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preparation of subsoil.
- B. Placing topsoil.
- C. Fertilizing.
- D. Sod installation.
- E. Watering.
- F. Establishment and replacement.
- G. Maintenance and mowing.

1.02 REFERENCE STANDARDS

- A. Mn/DOT Standard Specifications for Construction - Mn/DOT Standard Specifications for Construction; latest edition.
- B. O-F-241 - Federal Specification - Fertilizer, Mixed, Commercial; 1975.
- C. TPI (SPEC) - Guideline Specifications to Turfgrass Sodding; 2006.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Certificate: Certify grass species and location of sod source.
- C. Installation schedule: installation schedule shall be submitted a minimum of 30 days before beginning installation. Schedule shall specify planting season (spring or fall), dates, locations, and materials to be installed. Once accepted, revise only as approved in writing, after documentation of reasons for delays.
- D. Topsoil test results. See Section 31 2323 Fill for requirements.
- E. Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; Include recommended procedures to be established by Owner for maintenance/management of sod during entire year. Submit prior to expiration of required maintenance periods.

1.04 QUALITY ASSURANCE

- A. Sod Producer: Company specializing in sod production and harvesting with minimum five years experience, and certified by the State of Minnesota.
- B. Installer Qualifications: Company specializing in sodding with three years documented experience. Work shall be performed by personnel familiar with sodding procedures, and work shall be carried out under the supervision of a qualified sodding foreman.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver sod on pallets. Protect exposed roots from dehydration.
- B. Do not deliver more sod than can be laid within 24 hours.

PART 2 PRODUCTS

2.01 SOD

- A. Sod: Sod shall include a maximum of 2 inches of well established cultured sod consisting of 100% of a red variety of Kentucky Bluegrass. Acceptable varieties include Classic, Eclipse, Glade, and Monopoly. Sod shall be free from noxious weeds, relatively free from all other weeds and free from roots, stones and any other objectionable materials. Sod shall resist normal handling without undue breaking or tearing.
 - 1. Before sod is cut, it shall be raked free of debris and the top growth trimmed to a height of approximately 2 inches.

2. Sod shall be cut in uniform strips 18 inches minimum width and to a uniform thickness so a dense root system will be retained, but be exposed on the bottom side of the sod. When sod is cut, it shall be sufficiently moist to withstand exposure and handling during transplant operations. If necessary, sod shall be watered before cutting.
3. If necessary, sod shall be watered before cutting.

2.02 SOIL MATERIALS

- A. Topsoil: Type as specified in Section 31 2323.
- B. Contractor shall rake out and remove all objectionable matter in the topsoil and level soil prior to installing seed.

2.03 WATER

- A. Water for the execution of this work and maintenance shall be clean, fresh, and free of deleterious substances.
- B. Contractor shall furnish a hose and hose connection from hydrants and/or outlets where the water will be furnished.
- C. It is the responsibility of the Contractor to verify source of water and its availability prior to its use.

2.04 ACCESSORIES

- A. Fertilizer: Natural base; recommended for grass, with fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil, to the following proportions:
 1. Nitrogen: 10 percent.
 2. Phosphoric Acid: 10 percent.
 3. Soluble Potash: 10 percent.
 4. Apply at the rate of 30 pounds per 1,000 square feet.
- B. Wood Pegs: Softwood, sufficient size and length to ensure anchorage of sod on slope.
- C. Edging: 1/8" thick, black steel, with stakes in 10' segments.
 1. Rolled safety top.

2.05 SOURCE QUALITY CONTROL

- A. Provide analysis of topsoil fill under provisions of Section 31 2323 - Fill .
- B. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and pH value.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Prior to placement of sod, the Contractor shall be responsible for the examination and acceptance of all conditions affecting the proper installation of his work and shall not proceed until all unsatisfactory conditions have been corrected.
- B. Verify that prepared soil base is ready to receive the work of this section.

3.02 PREPARATION

- A. Prepare subgrade in accordance with Section 31 2200.
- B. Place topsoil in accordance with Section 31 2200.
- C. The grading of all areas to within 6 inches of final grade and the placing of 4 inches topsoil for final grading is specified in Section 31 2323 - Fill. Fine grade and smooth out areas as needed in preparation for the sod installation.
- D. Immediately prior to sodding, Contractor shall loosen the topsoil placed by the earthwork contractor to a depth of 3 inches on all areas except slopes steeper than 3 horizontally to 1 vertically, using discs, harrows and tiller rakes to produce fine grade. On slopes steeper than 3 to 1, use cultivating equipment in general direction at right angles to the direction of surface drainage wherever practical. The landscape contractor shall top-off the soil with an average of

2 inches of top soil to raise grades to the final elevations.

3.03 FERTILIZING

- A. Fertilizer shall be applied to a properly prepared soil bed prior to sodding with a mechanical spreader and thoroughly mixed in top 3 inches by means of a meeker harrow, by weighted chain link fence, or other approved method. Fertilizer must be dry and free flowing when applied.
- B. Apply fertilizer no more than 48 hours before laying sod.
- C. Lightly water to aid the dissipation of fertilizer.

3.04 LAYING SOD

- A. Precautions shall be taken to prevent sod from drying out and from heating. Sod that shows visible signs of heating shall not be incorporated in the project.
- B. Lay sod smooth and tight with no open joints visible, and no overlapping; stagger end joints 12 inches minimum. Do not stretch or overlap sod pieces. Lay smooth and align with adjoining grass areas.
- C. On slopes, the sodding shall begin at the bottom and progress upward with strips laid transverse to the flow of water. If necessary to protect sod already laid, the Contractor shall furnish ladders or treaded planks.
- D. At the top of the slopes, sod will be laid so water from adjacent areas will have free flow into sodded areas.
- E. On slopes 6 inches per foot and steeper, or in drainage swales, lay sod perpendicular to slope and secure every row with wooden pegs at maximum 2 feet. Pegs shall be spaced not more than 18 inches apart at an angle against the flow of the water. Pegs shall project one inch above the sod.
- F. Sod shall be watered and compressed into the underlying soil by rolling, or tamped into place. The initial watering and rolling shall provide firm contact and bond between the sod and the underlying soil. The rolling shall result in a smooth, even surface free of humps and depressions but shall not cause excessive compaction. Water sodded areas immediately after installation. Saturate sod to 4 inches of soil.

3.05 PROTECTION

- A. Contractor shall protect all that is to remain and shall conduct all sodding operations in a manner that will not damage or jeopardize the surrounding plant life designated on the Drawings as proposed or to remain.
- B. Identify sodded areas with stakes and string around area periphery. Set string height to 36 inches. Space stakes at 48 inches.
- C. Monuments: Carefully maintain benchmarks, monuments and other reference points, if disturbed or destroyed, have replaced or relocated by a registered surveyor at Contractor's expense.

3.06 COORDINATION

- A. Coordinate timing of topsoil installation with sod.

3.07 LIMITS OF WORK

- A. Sod all areas identified on drawings. Sod areas between the site and public road that are disturbed during construction. Any sod that is placed on site by the excavator for erosion control and subsequently disturbed shall be removed and/or replaced by the landscape contractor.
- B. Restore all lawn and surface areas, whether within the contract limits or not, disturbed as a result of earthwork operations of this job. Restoration shall be by sod if adjacent areas are sodded and shall otherwise be restored with seed unless otherwise noted on the plans.

3.08 ESTABLISHMENT AND REPLACEMENT

- A. Any sod which fails to become established during the first 30 days after Date of Substantial Completion shall be replaced immediately by the Contractor at the direction of the Landscape Architect.
- B. The Contractor shall ensure establishment and maintain sodded areas by watering, weeding and mowing for a period of three months from Date of Substantial Completion.

3.09 WATERING AND MAINTENANCE

- A. Watering of all turf areas shall be performed by the Contractor as necessary to assure that sodded areas are uniformly moistened and maintained in a moist condition for a period of three months from Date of Substantial Completion.
- B. Keep sod continuously moist and well watered for 14 days after laying. Thereafter, water sod until soil is soaked at least once every four days unless natural rainfall has provided equivalent water.
- C. Provide maintenance at no extra cost to Owner; Owner will pay for water.
- D. Provide maintenance of sodded areas for three months from Date of Substantial Completion.
 - 1. If sodding occurs in the fall and there is insufficient time for the sod to root back to the soil profile before freeze-up, the Contractor will need to continue to maintain the seeded areas in the spring until the grass is well established and exhibits a vigorous growing condition.
- E. Sod must be maintained until rooted back into the soil profile.
- F. Mow grass at regular intervals to maintain at a maximum height of 2-1/2 inches. Do not cut more than 1/3 of grass blade at any one mowing.
- G. Neatly trim edges and hand clip where necessary.
- H. Immediately remove clippings after mowing and trimming.
- I. Water to prevent grass and soil from drying out.
- J. Roll surface to remove minor depressions and irregularities.
- K. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
- L. Immediately replace sod to areas that show deterioration or bare spots.
- M. Protect sodded areas with warning signs during maintenance period.

3.10 INSPECTION

- A. Inspection of this work will be made by the Landscape Architect at the conclusion of the planting period upon written notice by the Contractor at least five days prior to anticipated date. Condition of plants will be noted and recorded for reference at end of warranty period.
- B. After inspection, the Contractor will be notified in writing by the Landscape Architect if there are any deficiencies of the requirements for Owner acceptance of the Work.

3.11 CLEAN-UP

- A. All soil manure, or similar material brought into paved areas by work operations shall be removed promptly, keeping these areas clean at all times. Upon completion of sodding, excess soil, stones, and debris not previously cleaned up shall be disposed of off-site.
- B. All ground areas disturbed as a result of sodding shall be restored to their original condition or to the desired new appearance.

END OF SECTION

SECTION 32 9300 PLANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preparation of subsoil and excavation below grade for plants.
- B. Placing planting soil and topsoil.
- C. Fertilizing.
- D. Planting new trees, plants, and ground cover.
- E. Mulch.
- F. Watering.
- G. Establishment and replacement.
- H. Maintenance.
- I. Tree Pruning.

1.02 REFERENCE STANDARDS

- A. ANSI/AHIA Z60.1 - American National Standard for Nursery Stock; 2014.
- B. Mn/DOT Standard Specifications for Construction - Mn/DOT Standard Specifications for Construction; latest edition.
- C. O-F-241 - Federal Specification - Fertilizer, Mixed, Commercial; 1975.
- D. ANSI A300 Part 1 - American National Standard for Tree Care Operations - Tree, Shrub, and Other Woody Plant Management - Standard Practices (Pruning); 2017.
- E. ANSI Z60.1 - NURSERY STOCK; 1996.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Installation schedule: installation schedule shall be submitted a minimum of 30 days before beginning installation. Schedule shall specify planting season (spring or fall), dates, locations, and materials to be installed. Once accepted, revise only as approved in writing, after documentation of reasons for delays.
 - 1. A pre-installation meeting with the Landscape Architect is required. Submit installation schedule and coordinate meeting date a minimum of 30 days before beginning planting.
- C. Topsoil and planting soil test results. See Section 31 2323 Fill for requirements.
- D. Maintenance Data: Include cutting and trimming method .

1.04 QUALITY ASSURANCE

- A. Substitutions will not be permitted. If proof is submitted that any plant specified is not obtainable, a written proposal will be considered for use of the nearest equivalent size or variety with an equitable adjustment of contract price.
- B. Codes: Plant materials shall comply with local, state and federal laws relating to inspection for diseases and insect infestation.
- C. Grading Standards: Plant stock shall conform to the code of standards set forth in the current edition of American Standards for Nursery Stock (ANSI).
- D. Plant Names and Labels: The nomenclature used in the Drawings and Specifications conforms, with few exceptions, to that of the current edition of Standardized Plant Names as adopted by the American Joint Committee on Horticultural Nomenclature.
- E. Installer Qualifications: Company specializing in installing and planting the plants with three years documented experience. Work shall be performed by personnel familiar with planting procedures, and work shall be carried out under the supervision of a qualified planting foreman.

- F. Labeling: Label at least one tree and one shrub per shrub bed of each variety with a securely attached waterproof tag bearing legible designation of botanical and common name.
- G. Maintenance Services: Performed by installer.
- H. Inspection: The Landscape Architect may inspect trees and shrubs (at place of growth or at site before planting) for compliance with requirements for genus, species, variety, size and quality. Landscape Architect retains right to further inspect trees and shrubs for size and condition of balls and root systems, insects, injuries and latent defects, and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from project site.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Notify Landscape Architect at least three days in advance of delivery of trees, shrubs and other plant material and manner of shipment. Furnish itemized list of actual quantity and sizes.
- B. When shipment of plant material is made by truck, pack to provide adequate protection against climate and breakage during transit and tie to prevent whipping. Cover tops to prevent damage.
- C. Deliver all packaged material in original, undamaged containers. Packaging to clearly identify manufacturer, brand, name, analysis of contents and net weight.
- D. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.
- E. Protect and maintain plant life until planted.
- F. Deliver plant life materials immediately prior to placement. Keep plants moist.
- G. Deliver plant material direct from nursery. Heel-in immediately upon delivery if not to be planted within four hours, covering with moist soil, mulch or other approved medium to protect from drying. Store plants in shade and protect from weather.
- H. Do not drop plant materials or pick up balled plants by stems or trunks.
- I. Handle packaged materials in such a manner as to prevent contamination or spillage.
- J. No plant shall be bound with wire or rope so as to damage the bark or spread of the branches.
- K. If required by Landscape Architect, apply anti-desiccant using power spray to provide an adequate film over trunks, branches, stems, twigs and foliage. If deciduous trees or shrubs are moved in full-leaf, spray with anti-desiccant at nursery before moving and again two weeks after planting. Spray coniferous plants that are planted in the fall.
- L. All materials used for balled and burlapped plants shall be natural (non-synthetic) and biodegradable. Wire baskets shall not be galvanized.
- M. All plant materials shall be assembled in one location on the job site to permit inspection and approval by the Landscape Architect. Stock with broken root balls or loose containers, and stock which shows evidence of being root bound, overgrown or recently canned, or damaged, shall be removed from the site immediately and replaced at the Contractor's expense with another plant meeting the original Specifications
- N. Dig balled and burlapped (B&B) plants with firm natural balls of earth of sufficient diameter and depth to include all fibrous and feeding roots. No plants moved with a ball will be accepted if the ball is cracked or broken before or during planting operations.
- O. Roots or balls of plants shall be adequately protected at all times from sun and drying winds.
- P. All balled and burlapped plants which cannot be planted immediately upon delivery shall be set on the ground and shall be well protected with soil, wet moss, or other acceptable material. Bare rooted plants which cannot be planted immediately shall be protected with soil, wet moss or heeled in trenches immediately upon delivery.

1.06 FIELD CONDITIONS

- A. Proceed with the complete landscape work as rapidly as portions of site become available, working within seasonal limitations.

- B. Planting shall be conducted under favorable weather conditions during either the Spring or Fall planting season for the applicable zone as described in the following table:

Planting Dates by Zone

			3	4
Spring	Deciduous	Bare Root	April 21 to June 1	April 7 to June 1
		Container B&B	April 21 to June 30	April 7 to June 30
	Coniferous		April 21 to June 1	April 7 to May 17
	Perennials		May 1 to June 30	May 1 to June 30
	Seedlings		April 21 to June 1	April 7 to June 1
Fall	Deciduous	Bare Root	October 1 to November 1	October 10 to November 15
		Container B&B	August 25 to October 15	August 25 to November 1
	Coniferous		August 25 to September 15	August 25 to September 15
	Perennials		August 25 to September 15	August 25 to September 15

- C. Utilities: Call Gopher State One Call and locate all other underground utilities. Perform work in a manner which will avoid possible damage. Notify Landscape Architect if conflict exists before excavating planting pits. Hand excavate, as required. Maintain grade stakes set by others until removal is mutually agreed upon by both parties concerned.
- D. Excavation: When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, or obstructions, notify Landscape Architect before planting.
- E. Coordinate planting with specified maintenance periods to provide maintenance up to date of Owner's acceptance.
- F. Do not install plant life when ambient temperatures may drop below 35 degrees F or rise above 90 degrees F.
- G. Do not install plant life when wind velocity exceeds 30 mph.
- H. Coordination with Lawns: Plant trees and shrubs after final grades are established and prior to planting of lawns, unless otherwise acceptable to Landscape Architect. If planting of trees and shrubs occurs after lawn work, protect lawn areas and promptly repair damage to lawns resulting from planting operations.

1.07 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide one year warranty on all plant material from Date of Substantial Completion. Plants shall be alive and in satisfactory condition at the end of warranty period. Such warranty excludes vandalism.
- C. At the end of the warranty period, inspection will be made by the Landscape Architect upon written notice by the Contractor at least three days before the anticipated date. Any plant required under this Contract that is dead or not in satisfactory condition, as determined by the Landscape Architect, shall be removed from the site, and shall be replaced as soon as conditions permit during the normal planting season.
- D. Replacements: Plants of same size and species as specified, planted in the next growing season, with a new warranty commencing on date of replacement, for one additional year after replacement. Replacement costs shall be the responsibility of the Contractor.

PART 2 PRODUCTS

2.01 PLANTS

- A. Plants: Species and size identified in plant schedule, grown in climatic conditions similar to those in locality of the work.

- B. Deciduous Trees: Provide balled and burlapped (B & B) deciduous trees of height and caliper listed scheduled or shown and with branching configuration recommended by ANSI Z60.1 for type and species required. Provide single stem trees except where special forms are shown or listed. Use boxing procedure in drawings for all containerized plants.
- C. Deciduous Shrubs and Perennials/Vines: Provide potted shrubs and perennials of the height shown or listed on the plant schedule and with not less than minimum number of canes required by ANSI Z60.1 for type and height of shrub required. Use boxing procedure in drawings for all containerized plants.
- D. Coniferous and Broad-Leafed Evergreens: Provide balled and burlapped evergreens of sizes shown or listed. Dimensions indicate minimum spread for spreading and semi-spreading type evergreens and height for other types, such as globe, dwarf, cone, pyramidal, broad up-right, and columnar. Provide normal quality evergreens with well-balanced form complying with requirements for other size relationships to the primary dimension shown. Use boxing procedure in drawings for all containerized plants.

2.02 SOIL MATERIALS

- A. Topsoil as specified in Section 31 2323.
- B. Planting soil as specified in Section 31 2323.
- C. Landscape contractor shall rake out and remove all objectionable matter in the topsoil and level soil prior to installing sod.

2.03 WATER

- A. Water for the execution of this work and maintenance shall be clean, fresh, and free of deleterious substances.
- B. Contractor shall furnish a hose and hose connection from hydrants and/or outlets where the water will be furnished.
- C. It is the responsibility of the Contractor to verify source of water and its availability prior to its use.

2.04 ACCESSORIES

- A. Double Shredded Hardwood Mulch: Organic mulch free from deleterious materials and suitable for top dressing of trees, shrubs, or plants and consisting of double shredded hardwood in all plant beds unless noted otherwise.
- B. Granite Chip Rock Mulch: 1/4" granite chip as specified to the area and depth on the plans.
- C. Fertilizer: Natural base, recommended for turf grasses and perennials, with 50 percent of the elements derived from organic sources; of proportion necessary to eliminate deficiencies of topsoil, to the following proportions:
 - 1. Nitrogen: 18 percent.
 - 2. Phosphoric Acid: 1 percent.
 - 3. Soluble Potash: 8 percent.
- D. Stakes and Braces: Wood stakes and braces shall be common lumber of the sizes in the following table::

Tree Size	Brace Stakes	Guy Stakes
1"	3-1/2" 2" X 2" X 9'-0"	2" X 2" X 2'-0"
4" & over	Not applicable	2" X 2" X 3'-0"
Conifers	Not applicable	2" X 2" X 3'-0"

- E. Guy Wires: Guy wires shall be a good commercial quality of galvanized wire. Wire used to guy trees up to four inches shall be No. 12 gauge; wire used to guy trees four inches and over shall be No. 9 gauge.
- F. Webbing: Shall be 3" wide nylon with grommets or 16" long polypropylene or polyethylene 40 mil. 3" wide straps. Requests for standard hose and wire guying systems will not be approved. See detail.

- G. Edging: 1/8" thick, black steel, with stakes in 10' segments.
 - 1. Rolled safety top.
- H. Anti-desiccant: Wilt Pruf; <https://wiltpruf.com/>
- I. Pelleted weed preventer: pre-emergent granular weed prevent containing corn gluten as the active ingredient.

2.05 SOURCE QUALITY CONTROL

- A. Provide analysis of topsoil and planting soil under provisions of Sections 01 4000 and 31 2323.
- B. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt and organic matter; pH value and _____.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Prior to placement of plants, the Contractor shall be responsible for the examination and acceptance of all conditions affecting the proper installation of his work and shall not proceed until all unsatisfactory conditions have been corrected.
- B. Verify that prepared subsoil and planters are ready to receive work.
- C. Saturate soil with water to test drainage.
- D. Verify that required underground utilities are available, in proper location, and ready for use.
- E. Obstructions Below Ground
 - 1. In the event that rock or underground construction work or obstructions are encountered in any plant pit excavation work to be done under this Contract, alternate locations may be selected by the Landscape Architect. Where locations cannot be changed, the obstructions shall be removed to a depth of not less than three (3) feet below grade and no less than six (6) inches below bottom of ball or roots when plant is properly set at the required grade. The Contractor shall be responsible for the removal of such rock or underground obstructions encountered.

3.02 PREPARATION OF SOIL

- A. Prepare subsoil to eliminate uneven areas. Maintain profiles and contours. Make changes in grade gradual. Blend slopes into level areas.
- B. Remove foreign materials, weeds and undesirable plants and their roots. Remove contaminated subsoil.
- C. Scarify subsoil to a depth of 3 inches where plants are to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted subsoil.
- D. Dig pits and beds 6 inches larger than plant root system.
- E. Planting Soil Preparation: Prior to delivery to the Project, the compost for soil amending shall be tested and the test results shall be approved by the Landscape Architect in accord with the guidance provided in Section 31 2323 - Fill for planting soil:
 - 1. The Contractor shall furnish a certification from the supplier that the materials have been produced by accepted aerobic composting techniques employing turning or aeration, pathogen reduction and curing.
 - 2. Prospective sources should be indicated to the Landscape Architect allowing at least six weeks prior to delivery for testing and approval. The Contractor shall bear all testing costs.

3.03 FERTILIZING

- A. Apply fertilizer in accordance with manufacturer's instructions.
- B. Apply after initial raking of topsoil.
- C. Mix thoroughly into upper 3 inches of topsoil.
- D. Lightly water to aid the dissipation of fertilizer.

3.04 SHRUB & PERENNIAL PLANTING

- A. Layout: All shrub bed locations shall conform to the Drawings.
- B. Planting Holes: Conform to the minimum dimensions indicated in the Drawing Details.
- C. Spaded Edges, where applicable: Neatline planting bed edges with straight edge spade.
- D. Planting: Scarify bottom of plant holes or beds. Set plants at correct spacing, remove containers, and fill with planting soil. Set plants plumb.
- E. Weed Control: Apply pelleted weed preventer on soil around plants at manufacturer's rates over entire area to receive mulch, taking care to not damage plantings.
- F. Mulch: Spread mulch evenly at 4" depth around plants, taking care not to smother small plants.

3.05 TREE PLANTING

- A. Layout: All tree locations will be staked by the Contractor in the field to conform to the Drawings. Locations shall be approved by the Landscape Architect prior to digging and placement. No material shall be planted without approval of the Landscape Architect. Where overhead obstructions are encountered, tree relocation shall be designated by the Landscape Architect.
- B. Planting Holes: Shall be essentially circular with a diameter two feet greater than the diameter of the ball of the tree. The depth of the pit shall be enough to set the flare of the tree to its original grade. The flare of the tree shall not be set below grade. If the native soil at the site is heavy or wet, consult with the Landscape Architect to determine correct setting height of the tree.
- C. The side walls of the planting pits shall be scarified with a mattock, pick ax, spade or other appropriate tool.
- D. Setting of Trees:
 - 1. Dig planting hole to size specified in Planting Hole Dimensions Schedule and/or Planting Details on Drawings.
 - 2. Scarify sides and bottom of hole.
 - 3. Set tree on undisturbed native soil or thoroughly compacted backfill soil at the same depth it was grown in the nursery. In no case shall the flare of the tree root be set below grade.
 - 4. Lifting from the bottom of the root ball, the tree shall be placed in planting hole with burlap and wire basket, if used, intact. Once in place the plant shall be backfilled to within 12" of the top of the rootball and watered. Burlap shall removed from the top of balls and adjusted to prevent air pockets. No burlap shall be pulled from under the balls.
 - 5. Plumb and backfill with planting soil specified in 31 2323 - Fill and L500 Drawings.
 - 6. Apply water to settle plants and fill voids.
 - 7. Water thoroughly within two hours.
 - 8. Place 4" of shredded hardwood mulch within 48 hours of the second watering unless soil moisture is excessive. Use the diameter of planting hole width as the mulch area around every tree. Pull all mulch away from the trunk.
 - 9. If the native or in-place soils are of clay origin, set the plant 1-2" above grade or as directed by the Landscape Architect.
 - 10. If the Contractor encounters poorly drained soils, do not complete planting and contact the Landscape Architect. If the Contractor is authorized to proceed with planting on wet, poorly drained soils (indicated by mottled soils) do not construct watering basin; instead leave a two-inch high pedestal on the bottom of the planting pit.
- E. Pruning: Remove dead or damaged branches only. Do not cover any cuts. No leaders shall be cut. All pruning shall be done with clean, sharp tools.
- F. Tree Collar: Gently set plastic perforated corrugated pipe collar into top of root ball and surround with mulch. There shall be no mulch between collar and trunk of tree. The Contractor shall be responsible for maintaining this condition for the duration of the warranty.
- G. Staking: The Contractor shall stake all evergreen trees planted after October 1st. The stakes and guy wires shall be removed the following spring. The Contractor is responsible for

maintaining all other trees in a upright position for the maintenance period. If the trees begin to lean during that period, the Contractor shall stake the trees using the methods described in the Drawings and use the materials described in the definitions above. The Contractor shall remove all staking in the spring following the planting.

- H. Tree Watering Bags: Contractor may decide to utilize tree watering bags during growing season. Tree watering bags must be removed prior to winter season. Watering bags are not a substitute for watering requirements per the plant warranty. Watering bags are considered incidental to the cost of plantings.

3.06 TREE PRUNING

- A. Prune trees as recommended in ANSI A300 Part 1.
- B. Prune newly planted trees as required to remove dead, broken, and split branches.

3.07 WATERING AND MAINTENANCE

- A. Provide maintenance of planted areas for three months from Date of Substantial Completion at no extra cost to Owner; Owner will pay for water.
- B. The Contractor shall be required to make periodic checks on the total project to make certain that the materials are properly cultivated and pruned and that all guys and stakes are in proper adjustment, and that the sum of all conditions are contributing to the satisfactory progress of the materials.
- C. Irrigate sufficiently to saturate root system and prevent soil from drying out. Assure that planted areas are uniformly moistened and maintained in a moist condition for a period of three months from Date of Substantial Completion.
 - 1. Contractor may provide and use watering bags for trees, at their discretion. Bags must be removed before winter.
- D. The Contractor shall monitor the planting material to assure that, if the site is irrigated, overwatering does not occur. Contractor shall be responsible for providing the Owner a watering schedule for all plants.
- E. Remove dead or broken branches and treat pruned areas or other wounds.
- F. Neatly trim plants where necessary.
- G. Immediately remove clippings after trimming.
- H. Planting beds shall be maintained weed-free for three months from Date of Substantial Completion.
- I. Replace mulch when deteriorated.
- J. Maintain wrappings, guys, turnbuckles, and stakes. Adjust turnbuckles to keep guy wires tight. Repair or replace accessories when required.

3.08 INSPECTION

- A. Inspection of this work will be made by the Landscape Architect at the conclusion of the planting period upon written notice by the Contractor at least five days prior to anticipated date. Condition of plants will be noted and recorded for reference at end of warranty period.
- B. After inspection, the Contractor will be notified in writing by the Landscape Architect if there are any deficiencies of the requirements for Owner acceptance of the Work.

3.09 CLEAN UP

- A. Any soil, manure, peat or similar material which has been brought onto paved areas by hauling operations or otherwise shall be removed promptly, keeping the area clean at all times. Upon completion of the planting, all excess soil, stones, and debris which have not previously been cleaned up shall be removed from site or disposed of.
- B. All ground area disturbed as a result of planting operations shall be restored to their original condition or to the desired new appearance.

END OF SECTION

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SECTION 33 0000 UTILITIES

PART 1 GENERAL

1.01 SUMMARY

- A. Provide labor, materials, tools, equipment, and appurtenances for water main, sanitary sewer, and storm sewer facilities and stub into the building, including dewatering, backfilling and compaction of trenches as necessary to complete construction of the project. The scope also includes off-site utility and street improvements or repairs within the public right of way. Document costs for on-site and off-site work independently and under separate contracts.
- B. Preconstruction Meeting. Prior to construction, schedule a meeting with all relevant trades, consultants and agencies represented.
- C. Coordinate work with the City of Watertown.
- D. Work is subject to the inspection of the Watertown Public Works Department.
- E. Verify the location of existing utilities in affected areas and protect them accordingly during construction. Notify Gopher State One-Call Agency before performing construction.

1.02 REFERENCES

- A. American Society of Testing and Materials (ASTM).
- B. American Water Works Association (AWWA).

1.03 SUBMITTALS

- A. Data certified by the pipe and/or fitting manufacturer that the pipe, fitting, accessories and linings are as specified.

1.04 QUALITY CONTROL

- A. Furnish new, best quality pipes, fittings, valves, hydrants, etc., of specified weight and dimensions
- B. Utilize equipment of proper size and in good working condition to prosecute work to full completion in a satisfactory manner.
- C. Utilize experienced personnel familiar with the equipment, methods and procedures for the job.
- D. Coordinate obtaining City permits and inspections with applicable city officials.
- E. Test per City requirements.

1.05 PERFORMANCE REQUIREMENTS

- A. Perform Work according to requirements of above referenced specification sections. This includes, but is not limited to materials, construction requirements, pipe laying operations, service installation, connections, disinfecting system, restoration, operational inspection, conductivity and leakage tests.
- B. Minimum cover over top of pipe: 7.5-feet.

1.06 EXISTING UTILITY INTERRUPTIONS

- A. A. Coordinate Work, required shutdowns, and duration of outages to existing water service with the City and Owner. Ensure this coordination is initiated at least 2 weeks prior to the Work.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 33 4100 SUBDRAINAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Building Perimeter, Retaining Wall, and Under-Slab Drainage Systems.

1.02 REFERENCE STANDARDS

- A. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2021.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. Comply with applicable code for materials and installation of the work of this section.

2.02 PIPE MATERIALS

- A. Polyvinyl Chloride Pipe: ASTM D2729; plain end, 4 inch inside diameter; with required fittings.
- B. Use perforated pipe at subdrainage system; unperforated through sleeved walls.

2.03 AGGREGATE AND BEDDING

- A. Filter Aggregate and Bedding Material: Granular fill as specified in Section 31 2323.

2.04 ACCESSORIES

- A. Pipe Couplings: Solid plastic.

PART 3 EXECUTION

3.01 PREPARATION

- A. Hand trim excavations to required elevations. Correct over-excavation with _____.
- B. Remove large stones or other hard matter that could damage drainage piping or impede consistent backfilling or compaction.

3.02 INSTALLATION

- A. Install and join pipe and pipe fittings in accordance with pipe manufacturer's instructions.
- B. Place drainage pipe on clean cut subsoil.
- C. Place filter fabric over levelled top surface of aggregate cover prior to subsequent backfilling operations.
- D. Place aggregate in maximum 4 inch lifts, consolidating each lift.

3.03 PROTECTION

- A. Protect pipe and aggregate cover from damage or displacement until backfilling operation begins.

END OF SECTION